THE ORIGIN AND ANTIQUITY OF THE ESKIMO

BY

HENRY B. COLLINS

Anthropologist, Bureau of American Ethnology

FROM THE SMITHSONIAN REPORT FOR 1950, PAGES 423-467
(WITH 4 PLATES)

(PUBLICATION 4041)

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[With 4 plates]

Though numbering less than 40,000, the Eskimos occupy almost half of the world's Arctic coast lands. Beginning at the northeastern tip of Siberia, their scattered settlements extend eastward for more than 6,000 miles along the Arctic and sub-Arctic coasts of Alaska, Canada, and Greenland. No other primitive people occupy so wide a territory and at the same time exhibit such remarkable uniformity of language, culture, and physical type. Where Eskimo and Indian meet, as on the rivers of Alaska and in the interior of northern Canada, the culture and physical type of both groups have been affected. But nowhere have the Indians penetrated to the Arctic coast. Here, where the Eskimos hold undisputed possession, there is one language and, with certain exceptions to be noted later, one basic culture and physical type.

The origin of the Eskimo and his peculiar culture has been debated for many years. Probably the majority of American anthropologists ① in the past have accepted the theory that the Eskimos are an American people and their culture an American product. Boas, who studied origin the Baffin Island and Hudson Bay tribes, considered that the original Eskimo homeland was the lake region west of Hudson Bay. Here, said Boas, the Eskimo race and culture were found in purest form, unmodified by Indian influence; moreover, the traditions of the Eskimos to the east, north, and west all pointed to an original center just west of Hudson Bay. Murdoch, Wissler, Stefansson, Jochelson, Shapiro, and others followed this view, which, principally because of the great influence and authority of Boas, became in America at least the orthodox and "scientific" theory of the origin of the Eskimos.

Among European scholars who adhered to the American origin theory were Rink and Steensby. According to Rink, the early Eskimos lived in the interior of Alaska. From this center they had followed the Alaskan rivers to the coasts, their culture meanwhile undergoing gradual change until it developed finally into the typical maritime form we know today.

A more elaborate theory was advanced by Steensby, who postulated a stratification of Eskimo culture. The oldest stratum was that found in the central archipelago of Canada, the high Arctic culture typified by the snow house, the dog sled, and various ingenious methods of hunting on the sea ice. This complex was "an outgrowth of an original North Indian form of culture, the winter side of which had become specially and strongly developed by adaptation to the winter ice of the Arctic Ocean" (Steensby, 1916, p. 186). Steensby thought that Coronation Gulf was the region where this adaptation had taken place. Belonging to a later stage were such features as kayak hunting on the open sea, the umiak, whaling, and the bird dart. These elements, lacking among the Eskimos of the Central regions, were characteristic especially of sub-Arctic Alaska and Greenland.

The latest and most comprehensive expression of this viewpoint is that of Birket-Smith (1929, 1930, 1936). His theory, though corresponding essentially with Steensby's, is considerably more elaborate and detailed. Birket-Smith believes that the Eskimo culture originated in the Barren Grounds west of Hudson Bay and that the Caribou Eskimos now living there are the direct descendants of the "Proto-Eskimos." Isolated in the interior, the Proto-Eskimos, like the modern Caribou Eskimos, lived by hunting the caribou and by fishing in lakes and rivers, in winter through holes in the ice. Later some of them—the "Palae-Eskimos"—moved to the seashore and learned to hunt seals by what is know as the "maupok" method, harpooning the seals at their breathing holes in the ice. The conversion of ice fishing into seal hunting on the sea ice was thus the first and most important step in the formation of Eskimo culture. Birket-Smith's theory has been summarized as follows:

> Originally the Proto-Eskimo lived inland from Hudson Bay and farther west. Whereas some of them, of whom the Caribou Eskimo are the last survivors, remained on the Barren Grounds, others resorted to the coast between Coronation Gulf and the Boothia peninsula, where they adapted their living to the sea and were thus enabled to spread along the coast; this is the so-called Palae-Eskimo stage. At a later period the far richer Neo-Eskimo culture came into existence in Alaska; it spread as far to the east as Greenland, but at present it is not known from the central regions except from the so-called Thule culture which was brought to light by the archeological investigations of the Fifth Thule Expedition, being otherwise obliterated by a modern Eschato-Eskimo advance of inland tribes that penetrated to the sea and constituted the recent Central Eskimo. [Birket-Smith, 1930, p. 608.]

(2) The opposite, or Asiatic, theory of the origin of the Eskimo has also had numerous supporters. First to express this opinion were the early explorers, who observed that the Eskimos had a distinctly Mongoloid appearance. Most of the nineteenth-century anatomists and anthropologists classified the Eskimos with the Asiatics, and later anthropologists such as Furst and Hansen, Hrdlička, and Hooton have concurred in this viewpoint. Ethnologists and archeologists such as Thalbitzer, Hatt, Bogoras, Kroeber, Mathiassen, Jenness, and Zolo-

tarev believe that Eskimo culture is essentially a product of the Old World. Students of Eskimo linguistics—Thalbitzer, Sapir, Bogoras, Jenness—all seek the origin of the language in Alaska or Siberia rather than in Canada or Greenland; and Sauvageot and Uhlenbeck have gone further and claimed a relationship between Eskimo and Ural-Altaic or Indo-European, the two major language stocks of the Old World. As will be shown later, the more recent archeological and somatological evidence confirms this point of view and seems to point conclusively to Eurasia as the place of origin of the Eskimo culture and race type.

The theory that has aroused more discussion perhaps than any other is that which derives the Eskimos from the Upper Paleolithic cave dwellers of western Europe. Boyd Dawkins and Sollas, the principal champions of this view, pointed to numerous resemblances between Eskimo and Paleolithic implements and art which they interpreted as evidence that the Eskimos were the actual descendants of Paleolithic man who had followed the reindeer northward at the close of the Glacial period, and at a later time spread eastward to Bering Strait. Physical evidence in support of the hypothesis was brought forward in 1889 by Testut, who claimed that a Magdalenian skull found in a rock shelter near Perigueux in the commune of Chancelade, France, could scarcely be distinguished from that of an Eskimo. ③

The theory of a racial or cultural connection between Eskimo and Paleolithic man has been opposed by a number of authorities though in later years it has received the support of Sullivan, Morant, and von Eickstedt. In general, the reaction of anthropologists has been one of skepticism or indifference, the prevailing attitude being that the idea was too spectacular and speculative to be scientifically valid. The postulated cultural connection seemed doubtful because some of the traits compared were of uncertain function; others were too simple and generalized or too widespread in their distribution to be indicative of a specific or exclusive relationship; and still others, as we now know, were traits characteristic of modern but not of ancient Eskimo culture. When Dawkins and Sollas wrote, there were no archeological finds from Siberia to bridge the enormous gap in time and space between Paleolithic man of western Europe and the modern Eskimo, nor was there any knowledge of prehistoric Eskimo culture. Now that excavations have been made in the American Arctic and Siberia, the postulated cultural affinities between Eskimo and Paleolithic appear in a different light. The recent excavations have produced new and unexpected evidence of relationship between the oldest Eskimo cultures, the early Siberian Neolithic, and the European Mesolithic (Collins, 1943). As the Mesolithic was a direct outgrowth of the Paleolithic, the Dawkins-Sollas theory may not have been so fanciful as it once seemed.

The archeological studies that have provided new insight into Eskimo culture began with those of Jenness (1925, 1928) and Mathiassen (1927) and have continued during the intervening years, the latest comprehensive works being those of Holtved (1944) in northwest Greenland and of De Laguna (1947) and Larsen and Rainey (1948) in Alaska. Important ethnological studies have also been made, and the same period has brought new information on the physical types of various modern and prehistoric Eskimo groups in Alaska and Canada. Though the recent investigations have provided the first factual data essential to an understanding of the problem of the Eskimo, it is not to be supposed that the final answers are at hand. For many parts of the American Arctic we still lack adequate information, and the recent discoveries have sometimes complicated rather than simplified the picture. In the following pages, after a brief summary of recent archeological discoveries and their implications, we shall attempt an over-all interpretation of the available evidence relating to the origin and affinities of the Eskimo race type and culture.

PREHISTORIC ESKIMO CULTURES

Thule.—Systematic Eskimo archeology began with the investigations of the Fifth Thule Expedition around Hudson Bay in 1922 and 1923 (Mathiassen, 1927). Excavating at old Eskimo sites north and west of Hudson Bay, Mathiassen uncovered evidence of a prehistoric culture that he called the Thule, which differed in many respects from that of the Eskimos now living in the region. The old Thule people lived along the seacoasts, in semisubterranean houses of whalebones, stones, and turf during the winter and in conical tents in summer. Unlike the modern Central Eskimos, the Thule people were whale hunters; they also hunted the walrus, seal, polar bear, and caribou. In material culture they differed markedly from the Central tribes, being much closer to the Greenland and Alaskan Eskimos. So close, in fact, were the resemblances to northern Alaska that Mathiassen was able to show that the Thule culture must have originated in the west, somewhere along the coasts of Alaska or Siberia north of Bering Strait. Having flourished for some centuries, the Thule culture disappeared from the Central regions, displaced and partly absorbed by the ancestors of the present Central tribes who moved from the interior out to the seacoasts. Meanwhile, the Thule Eskimos had moved eastward to Smith Sound in northwest Greenland. Excavations by Mathiassen, Larsen, and Holtved have traced in considerable detail the stages of development of Greenland Eskimo culture.

In West Greenland, the Inugsuk, a late stage of Thule culture dating from the thirteenth and fourteenth centuries, was in direct contact with the medieval Norse settlements of Southwest Greenland. With this initial date established for the Inugsuk stage Mathiassen estimates that the Canadian Thule culture, which was ancestral to it, existed in the Central regions around A. D. 1000. There are also strong indications of a return movement of Thule culture to northern Alaska within the past few centuries.

Though it has played an important part in the formation of modern Eskimo culture from Alaska to Greenland, the Thule tells us nothing as to the origin of Eskimo culture. For this we must turn to the older stages—the Cape Dorset culture of the Hudson Bay region, the prehistoric Aleutian-Kodiak-Cook Inlet cultures of South Alaska, and the Old Bering Sea and Ipiutak cultures around Bering Strait.

Cape Dorset.—The Dorset culture was first described by Jenness (1925) on the basis of material excavated by Eskimos at Cape Dorset on the southwest coast of Baffin Island and on Coats Island in Hudson Bay. Dorset sites have now been found widely distributed in the eastern Arctic from Newfoundland north to Ellesmere Island and northwest Greenland (Jenness, 1933; Wintemberg, 1939; Rowley, 1940; Leechman, 1943; Holtved, 1944; Collins, 1950). Though the Dorset and Thule occupied the same general region, the two cultures differed from each other in almost every respect. At the Dorset sites there is no trace of such typical Eskimo elements as whalebone mattocks and sled shoes, harness toggles, bone arrowheads, the throwing board, and harpoon sockets and finger rests. Completely ignorant of the bow drill, the Dorset Eskimos cut or gouged out the holes in their implements. Rubbed-slate artifacts, so common among other Eskimos, were very scarce as compared with implements of chipped stone. Distinctive types of harpoon heads, small ivory carvings and a simple geometric art style (pl. 1, a–f) are other features that characterize the Dorset culture. The Dorset people hunted walrus, seal, polar bar, caribou, hares, and foxes, but not the narwhal, beluga, or right whale. They had no knowledge of dog traction, though small hand sleds were used. As yet there is no definite information regarding their houses.

We know that the Dorset is older than the Thule culture because Thule implements are never found at pure Dorset sites, whereas Dorset objects frequently turn up in Thule sites. Moreover, at Inglefield Land in northwest Greenland, and at Frobisher Bay on Baffin Island, Dorset material has been found underlying Thule (Holtved, 1944; Collins, 1950). Inglefield Land is the only place in Greenland where the Dorset has been recognized as a distinct culture stage. There are indications, however, that the Dorset culture will prove to have been more widely distributed in Greenland than has been suspected. Solberg's "Stone Age" at Disko Bay (Solberg, 1907) is composed in large part of typical Dorset-type stone implements, which probably indicate a Dorset stage of culture preceding the Thule on the west coast (Collins, 1937; 1940); and similar Dorset types from Ammassalik and the Clavering Island region, illustrated by Solberg (1932), Mathiassen (1933), and Larsen (1934), suggest that future excavations may also reveal a Dorset stage on the Greenland east coast.

In contrast to the Thule, the Dorset culture appears to be deep-rooted in the eastern Arctic. Its origin, however, is uncertain. On the one hand it shows affinities with Indian culture, particularly the Beothuk of Newfoundland and prehistoric cultures of the Northeast. More difficult to explain but undoubtedly significant are the close resemblances of some of the Dorset art motifs and stone-implement types to those of the Ipiutak, Old Bering Sea, and prehistoric Aleutian and Cook Inlet cultures of Alaska (pl. 1). The Dorset can hardly have been derived from any of the prehistoric Alaskan Eskimo cultures as we now know them, although a remote connection of some kind is indicated. The most likely explanation, as suggested by Jenness (1941), is that the Dorset has stemmed from the same parent trunk as the ancient Alaskan cultures. The many and fundamental differences between them, however, would indicate that the Dorset moved eastward to Hudson Bay before the Ipiutak and Old Bering Sea cultures had reached their full development.

It is probably significant that recent work in Alaska to be described below has revealed indications both in the interior and at Cape Denbigh on the Bering Sea coast of an ancient, apparently pre-Eskimo culture or cultures with definite Asiatic affinities, characterized especially by burins, by small lamellar flakes, probably used as knives or scrapers, and the polyhedral cores from which they were struck off (Rainey, 1939; Skarland and Giddings, 1948; Giddings, 1949; Solecki and Hackman, 1951). Lamellar flakes of the same kind are found at many Dorset sites, and Solberg's Disko Bay collection, which probably is Dorset, also includes a polyhedral core comparable to those from Alaska (Solberg, 1907, p. 39). There is also a strong probability that the stone burins from Giddings' Cape Denbigh site and two of the early inland sites in Alaska are related to a characteristic Dorset implement of somewhat similar form which De Laguna (1947, pp. 193–194) suggests were used as burins.

Birnirk.—The first excavations in the western Arctic were made by Stefansson in 1912 (1914). Digging in a large mound at an abandoned site called Birnirk near Point Barrow, Alaska, Stefansson noted the presence of clay pottery and unusual types of harpoon heads and the absence of such characteristic modern features as iron, soapstone pots, pipes, net sinkers, and net gages. Wissler (1916), who described parts of Stefansson's collection, recognized the site as prehistoric but did not consider it to be especially old or to represent a distinct stage of culture. Excavations at Birnirk and other nearby sites by Van Valin in 1918 and Ford in 1932, interpreted in the light of later information, have revealed the Birnirk as a key stage or link between the prehistoric cultures of Alaska and Hudson Bay (Mason, 1930; Collins, 1934, 1940).

The fact that the Birnirk resembled both the Canadian Thule culture and the Old Bering Sea, which was known to be older than Thule, suggested that it was the Alaskan stage ancestral to the latter. The indirect indications of this relationship were confirmed by excavations at Kurigitavik, a Thule-Punuk site at Cape Prince of Wales, Bering Strait, where a Birnirk to Thule sequence in harpoon heads was found (Collins, 1940).

Old Bering Sea and Punuk.—Evidence from St. Lawrence Island and Bering Strait indicates that the Birnirk in turn was somewhat later than Old Bering Sea. The Old Bering Sea Eskimos, like the Birnirk and Thule, were a maritime people who lived in permanent villages on the seacoasts and who depended for their livelihood on seals, walrus, fish, and birds. Whaling was practiced but only to a limited extent. Like the Dorset people, the Old Bering Sea Eskimos did not use the dog sled, though they had small hand sleds for hauling skin boats and loads of meat over the sea ice.

Living in a region abounding in game, and thus having an assured food supply, the Old Bering Sea Eskimos developed a rich and complex culture (Collins, 1937). One of its most striking characteristics was an elaborate and sophisticated art style. Ivory harpoon heads, knife handles, needle cases, and many other objects were not only skillfully carved but decorated with pleasing designs formed of graceful flowing lines, circles, and ellipses. On St. Lawrence Island stratigraphic excavations revealed three successive stages of Old Bering Sea art—style 1 (Okvik) (pl. 1, j–o), style 2 (pl. 2), and style 3 (pl. 3). Following these, there appeared a simpler style, the Punuk, which foreshadowed modern Eskimo art (fig. 1, lower half).

The Punuk culture as a whole was partly an outgrowth of the Old Bering Sea and partly the result of new influences from Siberia. Developmental changes in harpoon heads and other implements which began in the Old Bering Sea period continued throughout the Punuk. A number of completely new types also made their appearance in the foreshadowed modern Eskimo art (fig. 1, lower half).

Though the Punuk was in all essential respects a stone-age culture, its art was the product of metal tools. This is evident from the appearance of the deeply and evenly incised lines and compass-made circles, and from the presence of small, slender engraving tools, several of which had bits of the iron points remaining in place. Stratigraphic and other evidence shows clearly that this metal long antedated the Russian period. Its source was probably eastern Asia

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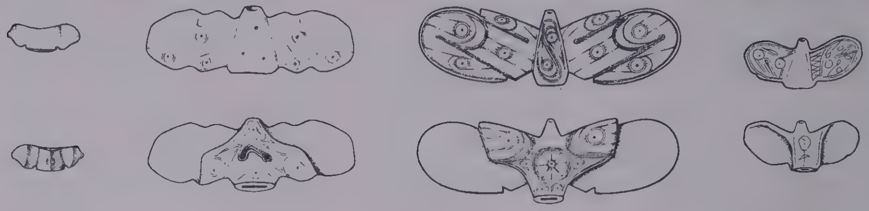
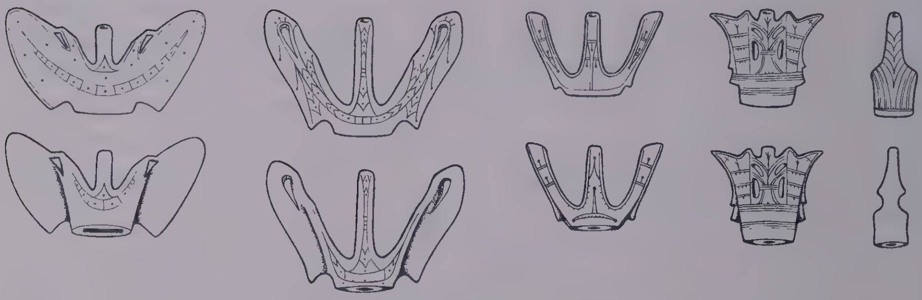
north of Korea where, from references in Chinese literature, we know that iron was in use as early as A. D. 262 (Collins, 1937, pp. 304–305).

We know that the Punuk was approximately contemporaneous with the Canadian Thule culture and somewhat later than the Birnirk. As yet there is no means of estimating the age of the Old Bering Sea culture, but a considerable antiquity is indicated by the magnitude of the deposits on St. Lawrence Island and by the long succession of cultural changes leading up to the Punuk. In the absence of any definite evidence, we may guess that the earliest Old Bering Sea remains may date from around the beginning of the Christian Era.[1] The Old Bering Sea and Punuk cultures are also found at Bering



OLD BERING SEA



PUNUK

FIGURE 1.—Ivory winged objects and related forms of unknown use from St. Lawrence Island and Arctic coast of Alaska. Upper row shows the Old Bering Sea winged forms (both sides), the earliest, at extreme left, belonging to the Okvik stage. In the succeeding Punuk stage the wings became smaller and inclined sharply upward, resulting in trident and "turreted" forms on which only a vestige of the outer wings remained, and finally a bottle-shaped form, with no wings. All have a basal socket and a small pit at end of central projection. Approx. 1 : 7. (For description see Collins, 1937, pp. 197–201.)

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[1] This paper was written before the results of radiocarbon dating had been announced. The provisional dates here mentioned for Old Bering Sea and other prehistoric Eskimo cultures and the relative chronological positions of these cultures are, with the exception of Ipiutak, those which I have given in earlier publications. The carbon-14 dates for several prehistoric Eskimo cultures have now been released though not formally published (Radiocarbon dates—September 1, 1950, by J. R. Arnold and W. F. Libby, Institute for Nuclear Studies, University of Chicago, 15 pp., offset). The age of Okvik, the earliest stage of Old Bering Sea culture, is given as 2,258 years ± 230. Giddings' middle layer at Cape Denbigh, comprising types resembling Ipiutak, South Alaska, and Dorset, is 2,016 years ± 250. Ipiutak itself is much younger than had been supposed, 912 years ± 170 at Point Hope and 973 ± 170 at Deering. Laughlin's "Palae-Eskimo" stage at Umnak Island in the Aleutians, equivalent to Hrdlička's "Pre-Aleut," is dated at 3,018 years ± 230.

Strait, and sporadic traces occur in Arctic Alaska. Until recently adequate information was not available for northeastern Siberia, though scattered finds of Old Bering Sea and Punuk art and implements suggested that the two cultures may have occurred there in greater concentration than in Alaska. Proof of this seems to have been provided by two recent Russian publications. Matchinski (1941) has described two archeological collections from the Chukchee Peninsula containing a number of Old Bering Sea and Punuk objects, and Rudenko (1947) describes a large body of similar material from 12 village sites on the east and south coasts of the Peninsula. According to all indications, it is in northeastern Siberia, somewhere between the mouths of the Anadyr and Kolyma Rivers that we must look for the immediate origin of the Old Bering Sea culture.

Ipiutak.—The most remarkable and most puzzling of all prehistoric Eskimo cultures is the Ipiutak, discovered at Point Hope on the Arctic coast of Alaska in 1939 by Rainey, Larsen, and Giddings (Larsen and Rainey, 1948). The Ipiutak culture proper lacked such typical Eskimo features as pottery, lamps, sleds, and rubbed-slate implements, and possessed a wealth of curious ivory carvings and numerous other features unknown to other Eskimos. A single iron-pointed engraving tool showed that the Ipiutak people had knowledge of metal. A closely related phase, the Near Ipiutak, differed in that it possessed whaling harpoon heads, stone lamps, and possibly pottery and rubbed-slate implements. Typical of both phases were small, finely chipped stone blades as well as antler and ivory arrowheads and lances with rows of stone side blades which were similar to types from early Neolithic sites in Siberia. The significance of this will be discussed later.

Thus far the Ipiutak culture proper is known only from the type locality, a huge site of almost 600 houses on the gravel spit at Point Hope. Larsen and Rainey believe, nevertheless, that the Ipiutak Eskimos were essentially an inland rather than coastal people. The Point Hope site, they believe, was occupied only in summer, when the people came down to the coast to hunt sea mammals. They spent the winter in the interior hunting caribou, like the modern Nunatagmiut, their supposed descendants. It is indeed difficult to see how so large a settlement could have been occupied throughout the year because of the enormous quantities of driftwood that would have been required for fuel, as the Ipiutak people did not use blubber lamps. Thus far, however, no trace of Ipiutak has been found in the interior, despite the fact that Solecki (1950) and others have found over 300 inland sites, many of them along the headwaters of the Colville and on the Utukok, Kokolik, Kugurok, and Kukpowruk, streams not far inland from Point Hope and along which theoretically the Ipiutak people should have lived for many years. A few of these sites are very old, being related to Giddings' early Denbigh Flint Complex, many are of undetermined age, and others are recent camp sites of the Arctic coast Eskimos who had gone inland to hunt caribou. This considerable body of negative evidence tends to weaken, though of course it does not disprove, the postulated inland affinities of Ipiutak. On the other hand, there is increasing evidence of Ipiutak at other coastal locations, for recent excavations by Larsen (1950) and Giddings (1949) have revealed sites with Ipiutak-like culture at Kotzebue Sound, Seward Peninsula, Norton Sound, and Kuskokwim Bay.

Despite its extreme specialization and divergence from other Eskimo cultures including Old Bering Sea, the Ipiutak has many features in common with the latter, and on the basis of actual correspondences in art and implement types is more closely related to it than to any other phase of Eskimo culture. Ipiutak art employed the same elements as Old Bering Sea, though in most instances the composition was somewhat simpler (e. g., pl. 1, q). A number of Ipiutak objects bear an ornamentation that is typical of Old Bering Sea style 1 (Okvik) and style 2 (pl. 2, a, b). And there are two artifacts—parts of ivory "winged objects" like the third figure in figure 1—which must be regarded as intrusive, as such objects are among the most striking and diagnostic features of the Old Bering Sea culture, but are not otherwise represented at Ipiutak. These two objects provide a relative *terminus a quo* for the Ipiutak culture, showing that the houses in which they were found could be coeval or later but not older than Old Bering Sea.

In addition to art, a number of Ipiutak implements, including complicated types of harpoon heads, adzes, arrowheads, bird-dart prongs, and snow goggles, are identical with or very similar to Old Bering Sea types. Ipiutak also shows significant resemblances to Dorset, to the prehistoric Aleutian and Cook Inlet cultures, and to that of the modern Eskimos of the Yukon-Bristol Bay area.

The Ipiutak flint industry is undoubtedly a survival from the Siberian Neolithic. However, Larsen and Rainey (1948) have shown that Ipiutak also had connections with Siberian bronze- and iron-age cultures of around the beginning of the Christian Era, from which they conclude "that the Ipiutak people at that time lived on the Arctic periphery of these culture centers" (p. 160). The original homeland of the Ipiutak people, they believe, was along the lower Ob and Yenesei Rivers, and their culture has such close parallels in this and adjacent regions that "it has not flourished very long on American soil." Postulating a short interval between the time the Ipiutak people left their Siberian home and their arrival in Alaska, Larsen and Rainey suggest that the Point Hope settlement dates back to the first or second centuries A. D. In view of its iron-age connections this would be the earliest possible date for Ipiutak. It is difficult to see how such a culture, stemming directly from the Siberian iron age, could have played the highly important role ascribed to it in the formation of Eskimo culture, as described below. The question arises, however, whether it is necessary to postulate an actual migration of the Ipiutak people or their immediate ancestors from the Ob and Yenesei region in order to account for certain Siberian elements in their art, religion, and ceremonialism. The more normal process of culture diffusion would seem a better explanation.

On the basis of their description and analysis of the Ipiutak culture Larsen and Rainey (1948) have proposed a new theory of the origin and relationships of the various Eskimo groups. According to their view, Ipiutak represents the type culture of a Palae-Eskimo complex—the original foundation on which all other Eskimo cultures rest. The Ipiutak complex includes the closely related Near Ipiutak, inland groups such as the Nunatagmiut of northern Alaska and the Caribou Eskimos west of Hudson Bay, the prehistoric Dorset culture of the Eastern Arctic, the Kachemak Bay and Aleutian cultures of south Alaska, and the modern Eskimos on the Bering Sea coast south of Norton Sound. With the exception of the modern Bering Sea Eskimos, all these groups had in common an economy based primarily on caribou hunting, sealing, and fishing; they used implements of chipped stone more than rubbed slate, and they lacked knowledge of pottery, whale hunting with floats, and dog traction. These seven widely scattered Eskimo groups are placed in the "Ipiutak complex," which is equated with Birket-Smith's Palae-Eskimo stage.

Though Old Bering Sea is supposed to have been an outgrowth of Ipiutak, it is placed in a separate category, the "Arctic Whale Hunting culture," which also includes the prehistoric Punuk, Birnirk, and Thule cultures and the modern Eskimos of northern Alaska and Greenland. It corresponds to Birket-Smith's Neo-Eskimo stage. The Arctic Whale Hunting culture, according to this theory, is a later stage which, having sprung from Ipiutak, had an independent development on the islands around Bering Strait where caribou hunting was replaced by an economy centered on the hunting of sea mammals—seals, walrus, and whales. Correspondences between Ipiutak and the Whale Hunting cultures—which are many and close—are regarded as the result of contact; those between Ipiutak proper and other members of the Ipiutak complex, which are fewer in number and of a more general character, are considered evidence of genetic relationship.

In a theoretical structure as elaborate and inclusive as this there naturally are many debatable points, which need not be discussed here. It is possible to accept the Asiatic affiliations of the Ipiutak culture, its relationship with modern Bering Sea and prehistoric south Alaskan and Dorset cultures, and its possible, but not yet proved, association with inland Eskimo culture as represented by the Nunatagmiut. At the same time one may question the reality of the proposed dichotomy in Eskimo culture, the dissociation of Ipiutak and Old Bering Sea, the view that Ipiutak is a transplanted Asiatic culture, and the assumption that Ipiutak, strongly influenced as it was by late bronze- and iron-age cultures of Eurasia, was older than and ancestral to all other known forms of Eskimo culture.

South Alaska.—When discovered by the Russians in the eighteenth century, south Alaska was one of the most densely populated sections of aboriginal North America. The Aleuts on the Aleutian Islands are estimated to have numbered between 15,000 and 25,000 and the Kodiak and Prince William Sound Eskimos about 10,000. The large number of old village sites in this area, especially in the Aleutians and on Kodiak, shows that the prehistoric population was equally great.

As the territory of these southernmost Eskimos and their linguistic relatives, the Aleuts, lay close to that of the Northwest Coast and interior Indians, they have, as might be expected, absorbed some elements of Indian culture. Their physical type, too, has been modified by Indian contact. However, the archeological evidence indicates that it is the modern culture of these regions that has been most strongly affected by such contact. The oldest stage of Kachemak Bay culture in Cook Inlet is definitely more Eskimolike than the later stages (de Laguna, 1934), and this seems to have been true also of Kodiak and the Aleutian Islands. We know from the hundreds of skeletons excavated by Hrdlička and Laughlin that the earliest inhabitants of Kodiak and the Aleutians were much closer in physical type to the Bering Sea Eskimo than are the modern Aleut and Koniagmiut (Hrdlička, 1944, 1945; Collins, 1945; Laughlin, 1950).

The relationship between the prehistoric cultures of south Alaska and Bering Strait is not yet clear. The south Alaskan culture as a whole can be described as generalized Eskimo, possessing many basic Eskimo features as well as others unknown in the north. Punuk art motifs occur in the late prehistoric deposits both at Cook Inlet and the Aleutians; and objects found in the lower levels of the Aleutian middens (pl. 1, g–i) are decorated in a style that suggests both Dorset and the earliest phase of Old Bering Sea art (Quimby, 1945; Collins, 1940). Also, certain types of harpoon heads, arrowheads, stone blades, and other objects indicate a relationship between the prehistoric Aleutian and Ipiutak cultures. The evidence at our disposal, both cultural and physical, indicates that south Alaska was a center of vigorous culture development around 2,000 years ago, that the basis of the culture established there was Eskimoan and that its carriers left the Bering Strait region before the Old Bering Sea and Ipiutak cultures were fully formed.

OLD WORLD RELATIONSHIPS OF ESKIMO CULTURE

The archeological discoveries sketched in the preceding pages have provided a wealth of new information on prehistoric Eskimo cultures in Alaska, the Central regions, and Greenland. If they have not brought complete disproof of the American-origin theory they at least have invested it with such serious difficulties that the theory must fall of its own weight. Since, according to this theory, the Proto-Eskimos are supposed to have lived as nomads in the Barren Grounds west of Hudson Bay, they could hardly have left archeological remains. However, as the culture of the Proto-Eskimos is supposed to have been essentially the same as that of the Caribou Eskimos, their modern descendents in the Barren Grounds, this type of culture or something like it should appear in the oldest archeological horizons. This expectation, however, is not realized. The oldest known Eskimo cultures, particularly those in Alaska, show no resemblance whatever to the supposed Central prototype.

It now appears extremely unlikely that there will be found anywhere in the American Arctic a simple proto-Eskimo or parent culture from which the various modern Eskimo cultures originally sprang. The oldest known Alaskan Eskimo cultures, instead of being simple, are already specialized and highly developed. As Bering Strait itself was an important culture center in prehistoric times the stages immediately antecedent to Ipiutak and Old Bering Sea will probably be found in the same region. Beyond this, however, we must look to the Old World. For if we postulate an origin for Eskimo culture anywhere in America we are faced immediately with the difficulty that the basic features of the oldest known Eskimo cultures are much more Asiatic, or Eurasiatic, than American.

Years ago, before archeological work had been undertaken in the Arctic, Thalbitzer, Hatt, and Kroeber, among others, presented weighty reasons for assuming that the basic substratum of Eskimo culture was Asiatic. The first systematic excavations—those made by Mathiassen at Thule culture sites west and north of Hudson Bay—brought tangible evidence sustaining and strengthening this point of view. The discovery of the Birnirk culture in Alaska, which was ancestral to the Thule, and of the related but still earlier Old Bering Sea culture, yielded a mass of new data which pointed conclusively in the same direction. Not one element of the Birnirk and Old Bering Sea cultures was exclusively or predominantly American in character. On the contrary, all of them were basically Asiatic. It is only in the Old World that we find either existing today or having existed in earlier times all the following elements: The square, wooden semisubterranean house with entrance passage, skin boats, sleds and toboggans, the toggle harpoon head, inserted side blades on implements, the throwing board and bird dart, lamps, pottery vessels, needle cases, and chipped-stone and rubbed-slate implements. These elements constitute the core of the Old Bering Sea and Birnirk cultures. Some of them—the square underground house, the throwing board, pottery, and chipped-stone implements—are also widely distributed in America but are equally widespread and of greater antiquity in Eurasia. The others are all deep-rooted elements of Old World culture that in America are found only among the Eskimos or in contiguous areas where Eskimo influence has probably extended. On the basis of the original Alaskan excavations, therefore, it seemed only reasonable to conclude that the roots of Eskimo culture were to be sought in Eurasia and not America.[2]

The discovery of the spectacular Ipiutak culture at Point Hope, Alaska, enables us to proceed beyond the demonstration of a general Eskimo–Old World relationship and to point to more specific connections.

One of the most striking features of the Ipiutak culture is the great number of chipped-stone implements, especially small, thin, lanceolate arrowpoints; rubbed-slate blades are entirely absent. The Ipiutak flint complex resembles those of the other early Eskimo cultures—Old Bering Sea, Kachemak Bay, Aleutian, and Dorset—in having an abundance of chipped-stone implements, whereas the later cultures all show a preponderance of rubbed-slate; likewise a number of specific Ipiutak types are shared with the cultures mentioned. Small, finely chipped arrowpoints like those from Ipiutak are also found in Eurasia. They have been described from old sites in Kamchatka and the Kurile Islands and are among the most characteristic features of a widespread Neolithic complex extending from Mongolia and the Baikal region to the Ural Mountains. The arrowpoints illustrated by Prokoshev (1940, pl. 3, figs. 9–14), from the Astrakhan site on Lake Griaznoe, near the confluence of the Chusov and Kama Rivers on the west slope of the Urals, are particularly close to the Ipiutak forms.

The excavations of the Russian archeologist A. P. Okladnikov have supplied what has long been needed, an analysis and description of the various stages of the Siberian Neolithic (Okladnikov, 1938, summarized by Collins, 1943). On the basis of excavation of graves and habitation sites on the Angara River and elsewhere around Lake Baikal, Okladnikov recognizes six culture stages preceding the iron age. The early inhabitants of the Baikal region are described as hunters, fishers, and food gatherers who lived in settlements along the lakes and rivers. Their mode of life represented a continuation from the upper Paleolithic of the same region, but the environment in which they lived was essentially that of the present and the animals they hunted were all of species still living today. Okladnikov regards the Baikal Neolithic as the Siberian equivalent of the European Mesolithic and dates it from the sixth millennium to the tenth century B. C., an estimate which, however, may be somewhat excessive. It would probably be better, following Clark (1940), to regard the Lake Baikal remains as "modified" Mesolithic, for, unlike the European Mesolithic, they include Neolithic elements. The small, delicately chipped, symmetrical arrowpoints, closely resembling Eskimo and American Indian types, are unlike those from pre-Neolithic horizons in Eurasia. Likewise, at the Baikal sites there are neither microliths nor burins, implements that are characteristic of the European Mesolithic and that, like Mesolithic art motifs, represent a direct continuation from the Upper Paleolithic.

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[2] Gjessing (1944), approaching the problem from the opposite direction—the stone-age cultures of northern Eurasia—arrived at the same conclusion, quite independently and without knowledge of the Alaskan excavations or the conclusions that had been drawn therefrom.

The three latest stages of the Baikal sequence included several distinctive types of artifacts and art motifs that were also characteristic of the Punuk, the intermediate stage of Alaskan Eskimo culture.

It is the earlier periods of Baikal culture—the Isakovski and Serovski—that are of particular interest and importance in connection with the problem of Eskimo culture. As might be expected, this early Neolithic was not a rich or elaborate culture. It is significant nevertheless that the entire range of implement types of the two oldest stages described by Okladnikov are, with the exception of shell beads and a few other ornaments, types which also occur in prehistoric Eskimo culture. These are the bow and arrow, polished-stone adzes, crescent-shaped jade and schist knives, scrapers, knives and lances with side blades, needles, needle cases, awls, and pottery vessels with conical and rounded bases.

Among the most striking features of the early Lake Baikal Neolithic are lances and knives with rows of small stone blades inserted in the edges (fig. 2, d). Side-bladed implements of corresponding form are also known from Neolithic Yang Shao sites in western China and Tibet (knives) and from Neolithic cave sites just east of the Urals (arrowheads and lances or knives, fig. 2, c). Side-bladed knives and projectile points are even more typical of the Mesolithic of northern Europe, being found at sites in southern Sweden, Denmark (fig. 2, a, b), northern Germany, Esthonia, and Belgium. In Alaska the prehistoric Eskimos of the Ipiutak, Old Bering Sea, and Birnirk periods used side-bladed knives and also equipped some of their harpoon heads with small stone side blades. The Ipiutak now furnishes a closer parallel in having bone and ivory arrowheads and lances with rows of small side blades directly comparable with the Siberian and Mesolithic forms (fig. 2, e, f). These side-bladed arrowheads and lances are complex in form and their distribution is significant, being restricted to the European Mesolithic, the related Neolithic of central Asia, and the Ipiutak Eskimo culture in Alaska. They are, therefore, one of the features most strongly indicative of a basic relationship between the Eskimo and Mesolithic-Neolithic cultures of Eurasia.

Other European Mesolithic features resembling those of prehistoric Eskimo culture are pottery lamps (Mathiassen, 1935), steep-sided, conical-based cooking pots, and barbed bone fish and bird spears

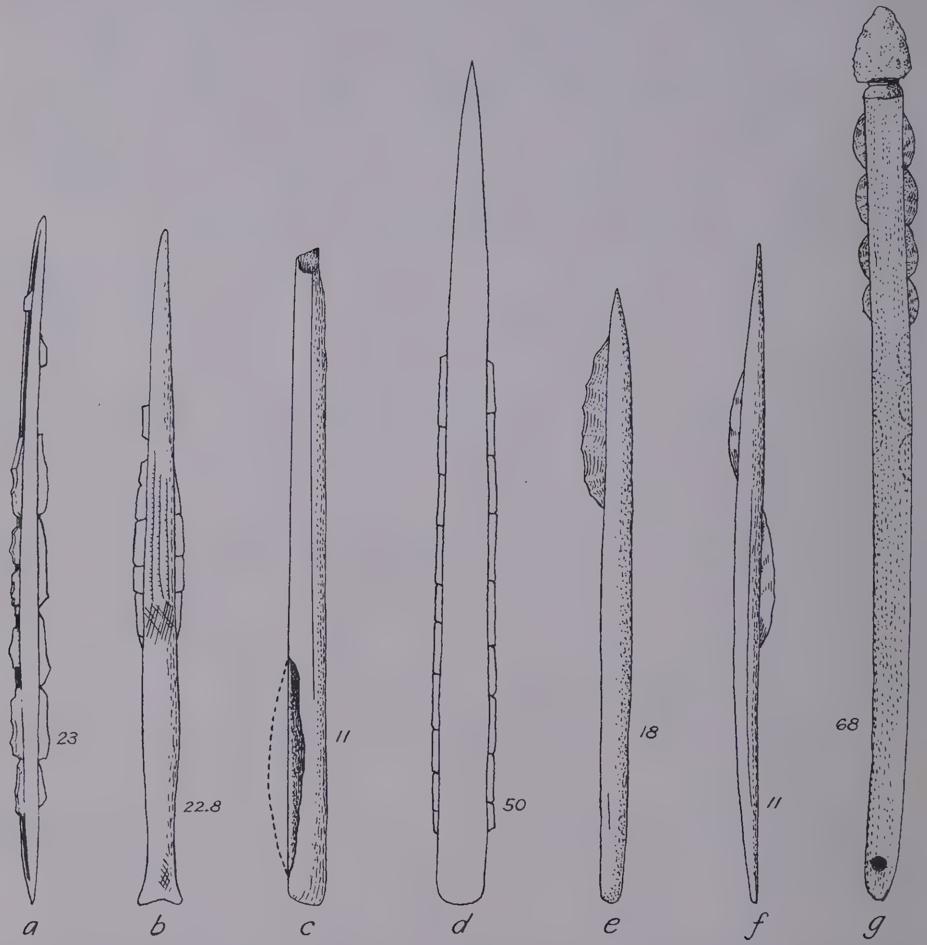
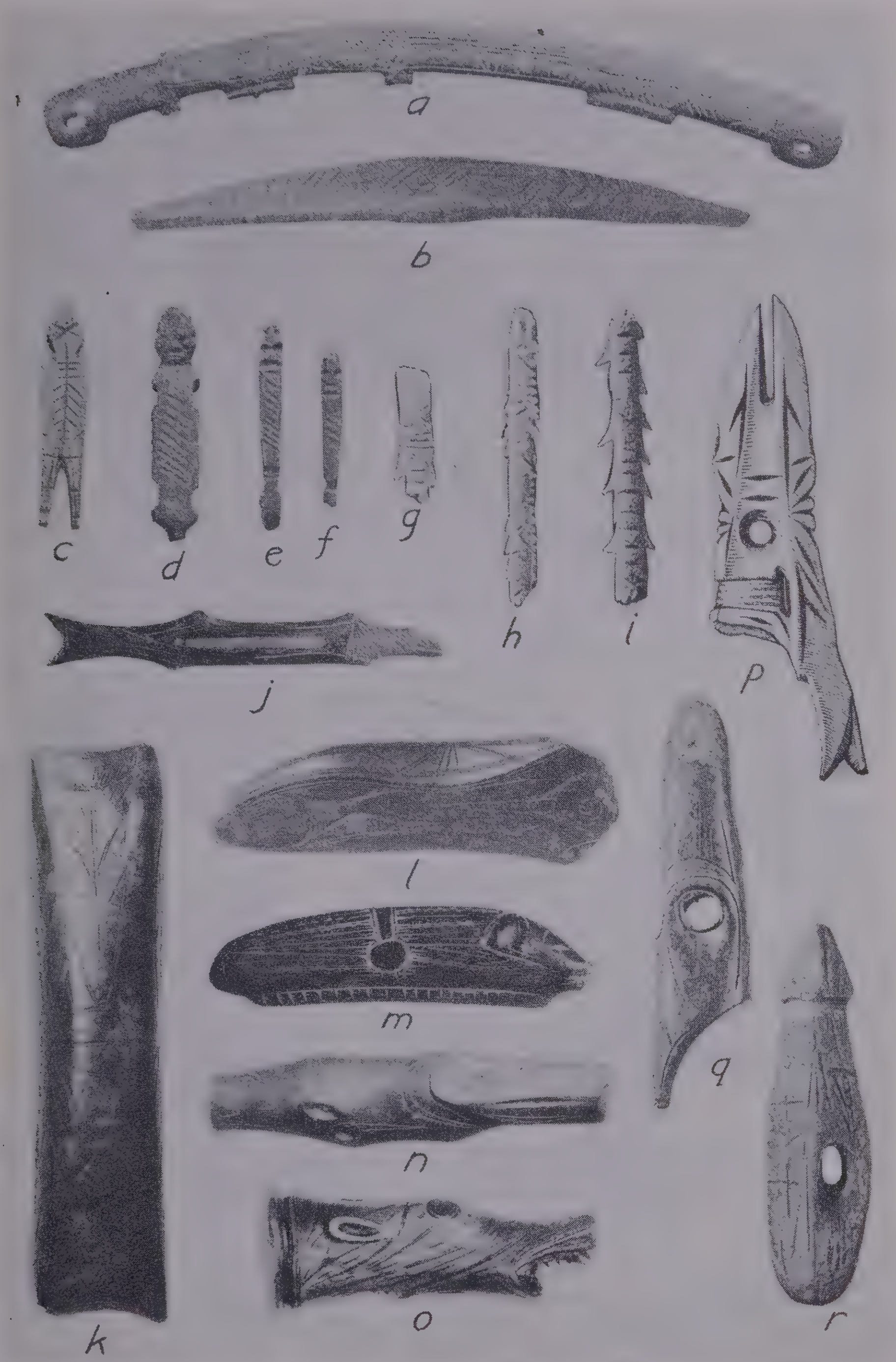
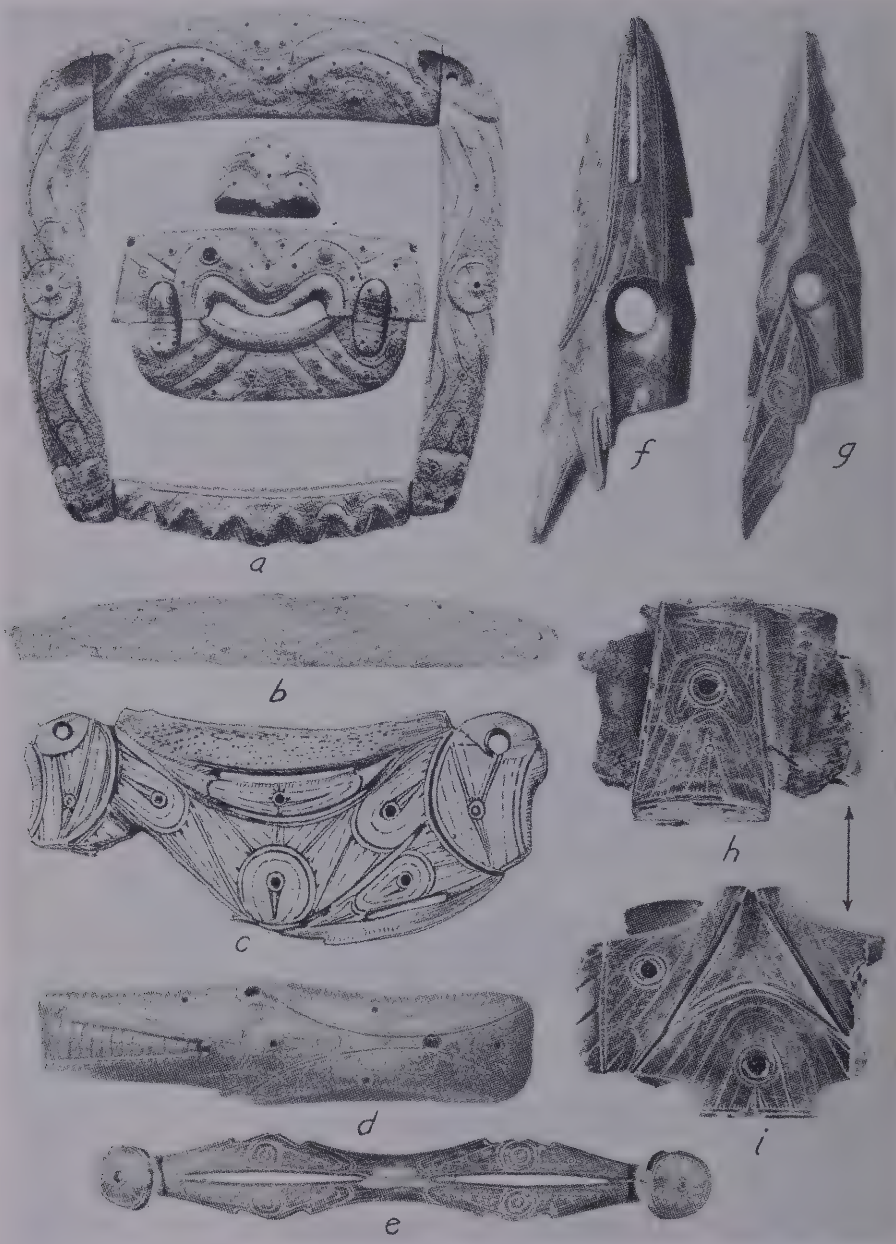


Figure 2.—Side-bladed implements—Mesolithic, Neolithic, and Eskimo. *a*, *b*, Denmark (after Madsen). *c*, Pychma River, District of Kamychlov, Perm (after Tolmachev). *d*, Ponomarevsk, Angara River, Siberia (after Okladnikov). *e*, *f*, Ipiutak, Point Hope, Alaska (after Rainey). *g*, Southampton Island, Hudson Bay (after Boas). (Not to scale; numbers indicate approximate length in centimeters.)

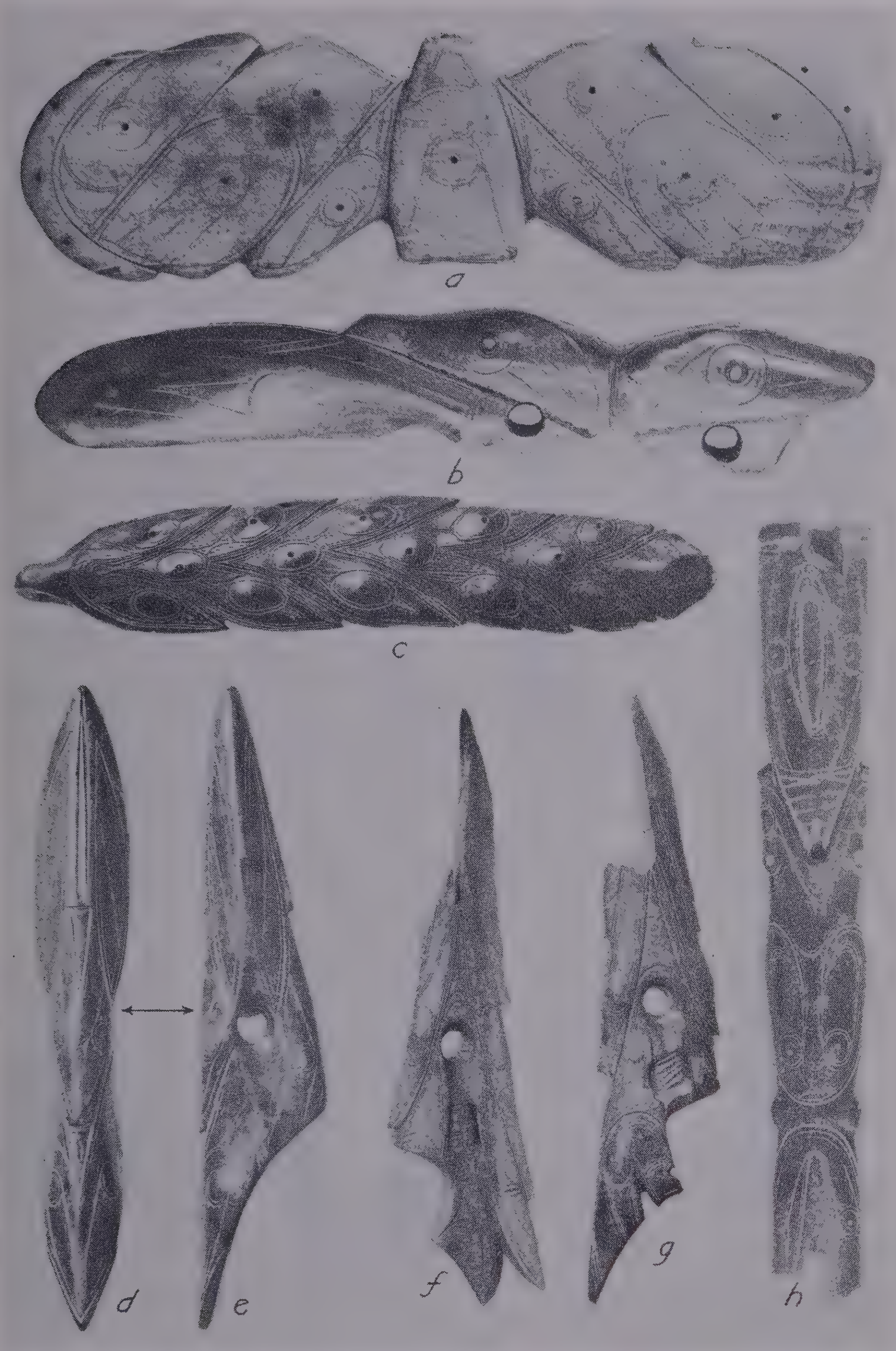
(Clark, 1936, fig. 41, pls. 6, 7). Finally, it should be noted that there seem to be significant resemblances between the geometric art of the European Paleolithic and Mesolithic and some of the simpler linear designs of Dorset and early Old Bering Sea art; some of the older Eskimo designs and motifs are actually closer to Paleolithic and Mesolithic art than to later styles in either America or Eurasia (de Laguna, 1932–33; Collins, 1940, 1943).



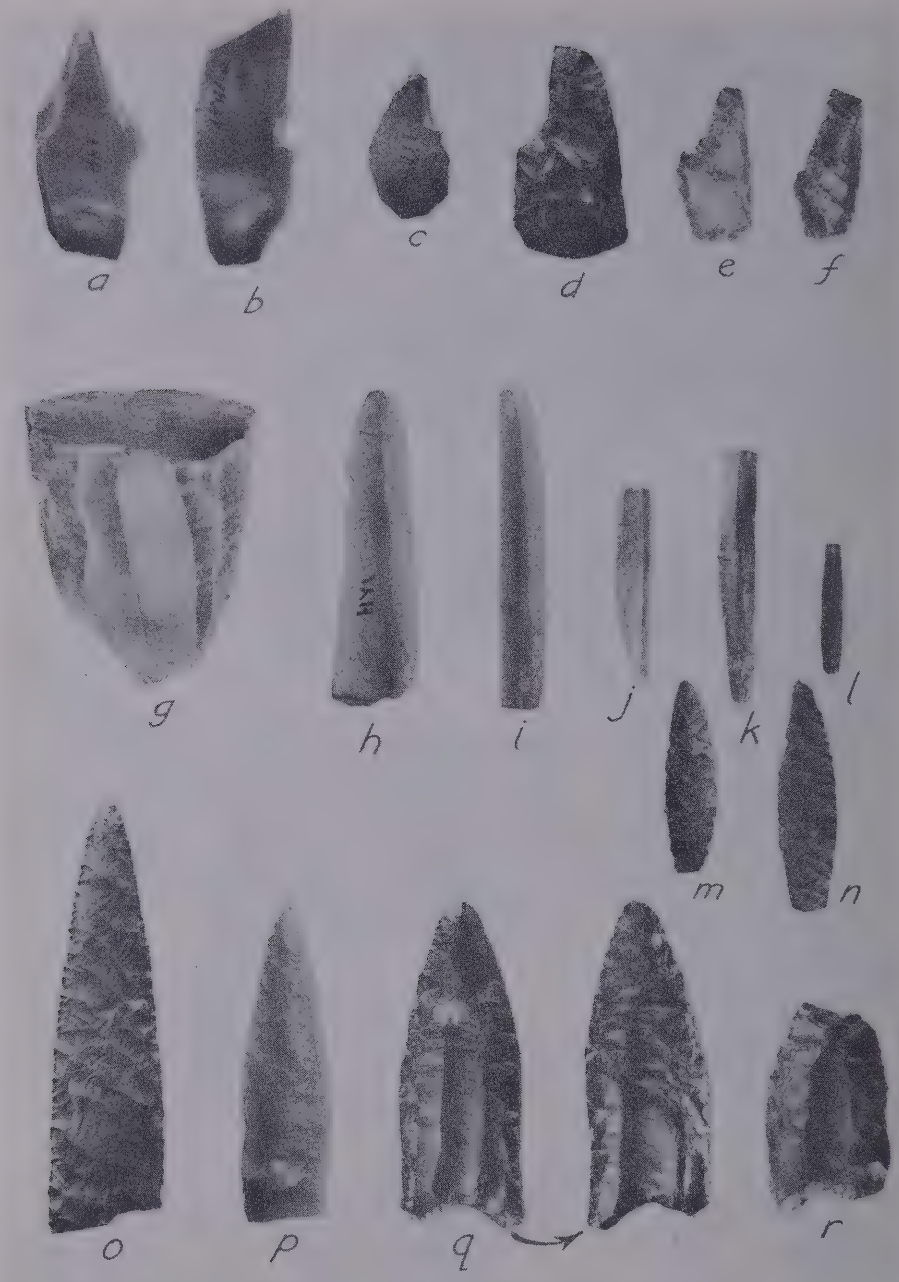
Early linear styles of Eskimo art from Greenland, Canada, and Alaska. *a*, Dorset quiver handle, antler, Northwest Greenland, 1:2, and *b-f*, wooden objects, Dorset, from Bylot Island, 1:3 (after Mathiassen). *g-i*, Bone dart points with Dorset-like designs, Aleutian Islands, 1:4 (after Quimby). *j-m*, Ivory objects decorated in Old Bering Sea style 1, Gambell, St. Lawrence Island, Alaska, 1:2. *n*, *p*, Ivory socket piece and harpoon head, Little Diomede Island, 2:3. *o*, Carved animal head from Okvik site, Punuk Island, same period as *j-n*, 1:2 (after Rainey). *q*, Antler harpoon head, Ipiutak, Point Hope, Alaska (after Larsen and Rainey). *r*, Ivory harpoon head of unusual type from base of midden, Punuk Island, 2:3.



Ivory objects decorated in Old Bering Sea style 2, Alaska. *a*, *b*, Masklike carvings and ornamental band, Ipiutak (after Larsen and Rainey). *c*, Gorget, and *d*, plaque, Gambell, St. Lawrence Island, 2:3. *e* and *g*, Pail handle and harpoon head, northern Alaska, 1:2. *f*, Harpoon head, Little Diomede Island, 1:2. *h*, *i*, Center of ivory winged object like plate 3, *a*, northern Alaska, 1:2.



Ivory objects decorated in Old Bering Sea style 3, Alaska. *a*, Winged object, use unknown, Point Hope, 1:2. *b*, Object of unknown use, northern Alaska, 2:3. *c*, Box or pail handle, and *f*, *g*, harpoon heads, Gambell, St. Lawrence Island, approx. 1:2. *d*, *e*, Harpoon head, northern Alaska, approx. 1:2. *h*, harpoon socket piece, Kukulik, St. Lawrence Island, 2:3.



Stone implements from early pre-Eskimo sites in Alaska. *a-d*, Flint burins, Cape Denbigh, Norton Sound, 3:5 (after Giddings). *e-f*, Flint burins, and *n*, flaked blade, Anaktuvuk Pass, Brooks Range, 2:3 (after Solecki). *g*, Flint core, and *j-l*, lamellar flakes, Anaktuvuk Pass, 2:3 (after Solecki) *h, i*, Lamellar flakes, and *m, o, p*, flaked blades, Cape Denbigh, 3:5 (after Giddings). *q*, Fluted blade, Folsom type, Utukok River, Northwest Alaska, 3:5 (after Thompson). *r*, Fluted blade, Kugururok River, tributary of Noatak, Northwest Alaska, 3:5 (after Solecki).

Further information will be needed, particularly on the archeology of the vast region between Lake Baikal and the Pacific and Arctic Oceans, before the postulated Siberian-Eskimo relationships can be fully understood. Okladnikov's investigations alone, however, sustain to a remarkable degree Hatt's view of the origin of Eskimo culture and of the development of culture generally in northern Eurasia and America. Hatt's theory, which was based originally on an exhaustive study of clothing types, postulated the existence of two great culture waves or strata in northern Eurasia and America. The older stratum, which Hatt called the "coast culture," originally occupied the inland waterways and later the coasts of northern Eurasia. Spreading eastward it established itself on the Bering Sea and Arctic coasts of America where it developed into the Eskimo culture as known today. The younger wave or stratum, called the "inland culture," was most typically represented by such peoples as the nomadic Tungusians of central Asia, whose possession of the snowshoe enabled them to expand over the vast inland plains and woodlands.

Okladnikov's excavations in the Baikal region afford tangible evidence of a cultural development very much as envisaged by Hatt—an early population of hunters and fishers who lived a settled life along the lakes and rivers before these territories were taken over by the reindeer-breeding nomads. And, as we have seen, the material equipment of these early Neolithic peoples was basically similar to that of the oldest Eskimos in Alaska.

The role of the Lake Baikal Neolithic in the formation of Eskimo culture has been emphasized because this is the particular Neolithic setting for which sequential stages have been most fully revealed and in which Eskimo affinities are most apparent. There were, of course, other Neolithic centers in the inland zones of Eurasia that may have contributed to the development of the coast cultures from which Eskimo culture sprang. Neolithic sites are known from one end of Siberia to the other, and some of them, for example, cave sites on the east slope of the Ural Mountains (Tolmachev, 1913), have yielded culture remains closely resembling those of the Baikal region.

The exact nature of the relationship between the European Mesolithic and the early Siberian Neolithic is yet to be determined. It will depend in part upon another uncertain factor—the role of the Siberian Paleolithic in the formation of later stages of culture in Eurasia. The Upper Paleolithic cultures of central Asia differed in many respects from those of western Europe, and their influences appear to have extended even to the oldest cultures of Scandinavia (Gjessing, 1944). However, we need not be concerned here with the nature of the relationship or the direction of culture flow between the European and Siberian Paleolithic, the Mesolithic of northern

Europe, and the Lake Baikal Neolithic. Important as these questions are, they are not within the scope of the present paper which is concerned only with cultural analogies of immediate and demonstrable significance in connection with Eskimo origins.

If our interpretation of the evidence is correct, the Eskimos become the first American people whose cultural origins, on the basis of actual archeological comparisons, can be traced to a specific time and place in the Old World. The postulated place of origin is thousands of miles to the west of the present Eskimo territory, and the time thousands of years in the past. How is this to be reconciled with the generally accepted view that the Eskimos were among the last of the Asiatic peoples to enter the American Continent, and particularly with the fact that the Eskimo culture exhibiting the closest Mesolithic-Neolithic affinities—the Ipiutak—had already been strongly influenced by late iron-age cultures of Siberia? Whether the theory that the Eskimos were late comers is still tenable in the light of recent archeological discoveries is something we will discuss later. However, assuming that it is, we would have a reasonable explanation of the seeming paradox in the phenomena of culture lag and culture stability in a marginal area. The taiga and tundra zones of central and northern Siberia formed a refuge area where basic culture patterns changed very slowly and at any given time in the past stood at an earlier stage of development than in adjacent regions to the south. In the relative isolation of the Arctic small groups of hunters and fishers who had moved north in Mesolithic-Neolithic times, and who later came to feel the impact of iron-age culture, perpetuated a basic pattern of life that had long since disappeared in the south. Thus there would be no real anachronism involved in the assumption that the oldest known Eskimos in Alaska and their immediate ancestors in northern Eurasia had continued a Mesolithic-Neolithic way of life, particularly in their subsistence activities and techniques, even though they lived in iron-age times and had absorbed features of iron-age culture.

PHYSICAL ANTHROPOLOGY

Anthropologists and anatomists by the score have speculated on the problem of Eskimo origins and have expressed widely differing opinions, none of which has provided a satisfactory answer as to when and where the Eskimo race type arose. Even today, with the wealth of new information we have on the development of Eskimo culture, we are still unable to speak with assurance on the origin and affinities of the Eskimo race. The physical type associated with one of the oldest Eskimo cultures, the Dorset, is unknown, and the skeletons found at Ipiutak are still undescribed. We are likewise handicapped by lack of full information on the physical type of the prehistoric Siberian peoples around Lake Baikal who, on the basis of culture, appear to have been in part, at least, ancestral to the Eskimo.

On the other hand, we do have skeletal material from prehistoric Birnirk, Thule, Punuk, and Old Bering Sea sites, and there are clues of possible significance in Eurasia, to which we will refer later. Though the present evidence affords no conclusive answer to the problem of the Eskimo race type, we have at any rate advanced beyond the point where theories have to be erected on the basis of small series of measurements on the living or on collections of undated skeletal material.

In its most characteristic form the Eskimo skull exhibits a combination of features that makes it one of the most distinctive and easily recognized of all human types. The vault is extremely long, narrow, and high, with a ridgelike elevation—the sagittal crest—extending along the top from front to back. The forehead is somewhat narrow and sloping, and there is a marked protuberance of the occipital region. The face is high and broad, and, what is most unusual, broader than the skull itself. The cheek bones are very prominent and the orbits are high. In contrast to the massiveness of the face as a whole, the nose is extremely narrow and the brow ridges only slightly developed. The nasal depression is shallow and the nasal bones are very narrow, usually having a "pinched-up" appearance. The Eskimo jaw is large and heavy, the upper part, or ascending ramus, being very wide and having an outward flare at the back which gives the face its characteristic squarish shape. Another distinguishing feature of the Eskimo skull is the unusual thickness of the tympanic plate, the bony ledge bordering the ear opening. Bony swellings or overgrowths on the lower and upper jaws and palate, known respectively as mandibular, maxillary, and palatine tori, also occur more frequently among the Eskimo than any other people. It is suggested here that these features, which are especially characteristic of the Eskimo—the "pinched-up" nasal bones, thickened tympanic plate, and mandibular and palatine tori—may be of equal if not greater significance genetically than purely metrical features such as head length, head breadth, etc.

The specialized type of skull just described—long, narrow, high—is not universal among the Eskimos, though it predominates in parts of West and East Greenland, the Mackenzie Delta, and in parts of northern Alaska. We know that the type is one of considerable antiquity because the skulls from the old Birnirk sites around Point Barrow already exhibit it. Of the three Old Bering Sea skulls that have been found, two conform to this type, while the third is mesocranic, or of medium length.

Skeletal remains of the modern Hudson Bay tribes are lacking but Birket-Smith's (1940) measurements show that the present-day Caribou, Netsilik, and Iglulik Eskimos are closer to the Cree and Chipewyan Indians than to other Eskimos. This resemblance is borne out visually, for the photographs of most of these Central Eskimos definitely suggest Indian, or in some cases European, mixture.

The Alaskan Eskimos in general are taller and more broad-headed than most of their eastern kinsmen. This has usually been attributed to Indian mixture. Unquestionably there has been ample opportunity in Alaska for this to have occurred, especially along the rivers where the Eskimos come into direct contact with the interior Athapaskans. Seltzer's analysis of Stefansson's measurements showed that the Nunatagmiut, an inland Eskimo group living along the Colville River in north Alaska, differ sharply from other Eskimos and conform more to the Indian type (Seltzer, 1933). In the same way, the Eskimos on the Kobuk and other northern rivers, and occasionally even some of those in the coastal settlements of northern Alaska, are much more Indian in appearance than Eskimo; this is also true of some of the Kuskokwim and Yukon Eskimos.

Elsewhere in Alaska, Eskimo-Indian admixture is much less apparent, and it is questionable whether the physical type of the other Alaskan Eskimo groups has been seriously affected by Indian contact, at least in recent centuries. The modern Eskimos along the coast from Barrow to Bering Strait are of the generalized northern Eskimo type. Though they do not exhibit the hyper-Eskimo features of the old Birnirk population they are still Eskimo in every respect, being practically identical with the old Thule type of the central Arctic (Fischer-Møller, 1937). At Bering Strait and a few other places on Seward Peninsula the long-headed Birnirk type has survived to the present time. The Alaskan Eskimos south of Seward Peninsula differ from those to the north in having shorter, broader, and lower heads, broader faces and noses. They resemble rather closely Hrdlička's "pre-Koniag," the early oblong-headed type from Kodiak Island, which, on the basis of archeological data, may have an antiquity of around 2,000 years.

The problem is to account for the origin of the two oldest Eskimo types of which we have knowledge, the highly specialized, extremely long-headed northern type, represented by the Birnirk crania, and the more generalized, but equally ancient oblong-headed type of south Alaska.

Before proceeding further we may digress to mention here one explanation that has been advanced repeatedly and that would solve the problem very simply by asserting that the most pronounced features of the Eskimo skull are the result of functional adaptation. The muscles of mastication, powerfully developed through chewing of tough food, are supposed to have compressed the skull laterally, thereby producing the long, narrow, keel-shaped vault so characteristic of the race. The same explanation is often advanced to account for the presence of mandibular and palatine tori—the bony swellings frequently found on the lower jaw and palate—as well as the strongly developed jaws, excellent teeth, and massiveness of the face in general. There are, however, serious objections to the "hard-chewing" hypothesis that its advocates do not take into account. In the first place, one may question the necessity of calling in a specific and functional explanation of the Eskimos' dolichocephaly when there are many other long-headed races, such as the prehistoric Texas cave dwellers, the Perique of Lower California, the Veddas of Ceylon, and various European and African peoples whose skull form is obviously not to be explained on this basis, since their faces and jaws, which would be the parts most directly affected by vigorous chewing, are for the most part rather small and weakly developed. Also, if skull form and facial development both resulted from hard chewing, why should some Eskimos have large faces and long heads and others large faces and broad heads?

Stefansson, who has lived for long periods among the Eskimos and who can speak with authority on their dietary habits, contends that there is no factual basis for the belief that they chew more vigorously than other people. He points out that boiled meat, which is the Eskimo's first preference, requires very little chewing, that raw meat is usually not chewed but gulped down like an oyster, and that frozen fish, when sufficiently thawed to be edible, is about the consistency of hard ice cream (Stefansson, 1946). The only really tough food eaten by the Eskimos is dried fish and meat, but the use of such food is by no means universal, for there are many districts where it is seldom eaten.

There are two specific facts that alone are enough to invalidate the theory that the typical long and narrow skull of the Eskimo is an adaptation resulting from vigorous use of the masticatory muscles: (1) The Eskimos who consume the greatest quantities of really tough food—dried fish and meat—are those living in Alaska, especially to the south of Bering Strait. Yet the skulls of these Alaskan Eskimos are not long and narrow but relatively short and very wide, in fact wider by a considerable margin than those of any other Eskimo group. (2) If the assumed lengthening of the head were a functional and progressive condition we should expect the most ancient crania to be at least somewhat shorter and wider than the modern. However, exactly the reverse is true, for as already pointed out the oldest skulls from northern Alaska are of the extremely long, high, narrow type. Similarly, the modern broad-headed Aleuts and Kodiak Islanders were preceded by earlier oval-headed populations. In view of this actual succession of cranial types, the functional theory falls completely to the ground, for if applied here it would mean that 2,000 years of hard chewing had produced not a long and narrow but a broader and more rounded form of skull.

Similar difficulties are encountered in attempting to explain the broad and massive face of the Eskimo as a progressive response to the energetic use of the jaws, for the old Birnirk Eskimos and the early population in the Aleutian Islands already exhibit facial diameters comparable in general to those of other Eskimo groups. The Mongols from Urga have facial measurements almost identical with Birnirk and show an accentuated development of the malar and upper maxillary regions comparable in every way to that of the Eskimo. Since the Mongols' diet of milk and cheese is not one requiring excessive use of the jaws, the functional theory cannot be adduced to explain their large and heavy faces. The total evidence, therefore, sustains the views of Hooton, Jenness, and Birket-Smith that the Eskimos have inherited and not acquired their peculiar skull form.

We may inquire, then, whether it is possible to identify the ancestral type, either in America or Asia. A number of attempts have been made to establish relationships between various Indian and Eskimo groups on the basis of either skeletal material or measurements on the living. Though we need not subject these claims to detailed scrutiny, it will be pertinent to review them briefly to see if they meet certain minimum requirements. For example, when physical resemblances between living Indians and Eskimos are interpreted as evidence of a basic relationship we need to know first whether the resemblances in question could be due to recent intermixture between the two groups; and second, whether the groups compared are representative of the original populations.

The latter consideration brings up the highly important question of white mixture, something too frequently ignored by anthropologists who have concerned themselves with the problem of the racial origin of the Eskimo. In parts of Labrador and West Greenland the infiltration of European blood has been going on for some 200 years, not to mention the probability of still earlier Norse mixture. In southern Alaska, particularly in the Aleutian Islands, the process of miscegenation began with the arrival of the Russian fur hunters in the middle of the eighteenth century. In northern Alaska the process was delayed for another hundred years, when the whaling fleets appeared in Bering Sea and the Arctic. Today, white mixture is apparent in many of the Eskimos of the Bristol Bay-Kuskokwim region, mainly the result of Russian contacts, and individuals of mixed Eskimo and white ancestry comprise an appreciable minority among the more northerly Eskimos. On the Diomede Islands, for example, most of the children and a considerable number of adults show clear evidence of white admixture, and to a lesser extent this is also true of nearby Wales. Here, and elsewhere on Seward Peninsula, the greatest dilution of Eskimo blood has occurred since 1900, beginning with the influx of miners and other whites during the Gold Rush. In view of these conditions it is obvious that extreme caution must be observed if anthropometric data on the living are to serve as a basis for discussion of racial affinities and origins. Skeletal material that antedates the period of white contact is far more reliable for such a purpose. In this case the principal requirement is that the total evidence, metrical and morphological, be presented, and not merely a few selected measurements.

The most extensive body of anthropometric data on the Eskimos of North Alaska and Coronation Gulf is that obtained by Vilhjalmur Stefansson who between the years of 1906 and 1912 measured 526 adult Eskimos from Kotzebue Sound eastward to Coronation Gulf. Particularly valuable are Stefansson's measurements of 127 Nunatagmiut, the inland Eskimos of the Colville River region, who are now virtually extinct. Seltzer, who made a careful study of Stefansson's data, showed that the Nunatagmiut and Mackenzie Eskimos differed sharply from all other Eskimos. The Nunatagmiut, with their broad short heads, short trunks, and long legs, were more Indian than Eskimo in physical type. According to Seltzer these Eskimos must have absorbed considerable Indian blood in comparatively recent times, which would not be surprising in view of their interior location in proximity to the Alaskan Athapaskans. The Mackenzie Eskimos, on the other hand, represented the opposite extreme, with very long and narrow heads, long trunks and short legs—features which marked them as the most Eskimoid of all the groups. From this Seltzer concludes that the Mackenzie Eskimos are the direct descendants of the old Point Barrow (Birnirk) population, a deduction which seems soundly based.

After demonstrating the interrelationships of the various Eskimo groups measured by Stefansson, Seltzer attempts to show that one segment of the Eskimo population, including the Caribou Eskimo on Hudson Bay, the Labrador and East Greenland Eskimo, were descended from the Cree Indians; another major grouping, including the Copper Eskimos of Coronation Gulf and the Kotzebue Sound, Seward Peninsula, and St. Lawrence Island Eskimos were the descendants of the Chipewyan Indians of the Lake Athabaska region.

Seltzer's first grouping is of particular interest because there undoubtedly does exist a prominent Indian strain among the Canadian Eskimos. Numerous observers have recognized this, and without recourse to measurements; the facial features of many of the Canadian Eskimos are distinctly "Indian" rather than Eskimo. Steensby, for example, was aware of this when he pointed out that among the Polar

Eskimos of northwest Greenland the descendants of an immigrant Canadian group from Pond's Inlet differed from the other Polar Eskimos in having distinctly Indian features. In 1948 the present writer had an opportunity to take measurements and observations on 80 adult Nugumiut Eskimas at Frobisher Bay on Baffin Island. Two basic, contrasting types were discernible among these Eskimos, even though a number of the individuals were blends between the two and others exhibited white mixture. The majority type exhibited the somewhat bland "Oriental" features usually associated with Eskimo—light skin color, very broad, round to squarish face, high cheek bones, small flat nose, low, narrow forehead, slightly oblique eyes and epicanthic fold. In the minority, or "Indian" type, the head is slightly longer, the face is more bony and rugged and somewhat longer and narrower, with the cheekbones standing out prominently because of relative lack of fat in the cheeks; the eyes are horizontal and usually lack the epicanthic fold; skin color is darker, the nose longer and more convex, and the mouth larger.

It is tempting to speculate on the possibility that these two physical types may be representative of the two prehistoric Eskimo groups of southern Baffin Island—the Dorset and Thule. As no skeletal remains have been found at Dorset sites the physical type associated with this early culture of the eastern Arctic is unknown. In the absence of direct evidence, it is possible that Dorset art might throw some light on the problem. In their bone carvings the Dorset artists portrayed two distinctly different types of human faces, placed side by side on the same piece of bone or antler (see Rowley, 1940, fig. 1, a; another carving much like this from Boothia Peninsula collected by Learmouth, now in the Royal Ontario Museum, and two somewhat similar specimens, also possibly Dorset, from the Egedesminde and Ammassalik districts in Greenland). The first type of face is broad and round in shape with oblique eyes and short, wide nose—what might be described as a caricature of the typical "Eskimo" face. The other type shows a long, narrow face with long nose. It is less stereotyped in appearance and might conceivably represent either Indian or European (Norse?). Assuming them to represent two distinct aboriginal types, one would guess that the first would be Thule and the second Dorset. It would be better, however, to defer speculation on such questions and await more definite evidence. It will be sufficient for our present purpose to confirm the existence of these two physical types, the Indian like and the Eskimo, among the central Eskimo population.

With regard to Seltzer's theory of the Indian (Cree) origin of the Caribou, Labrador, and Ammassalik Eskimos, we may pose two questions: Are these three Eskimo groups so similar in physical type that they may be assumed to have had a common ancestry? And, are the hypothetical ancestors pure-blood Indians?

As to the first question, the answer seems to be affirmative, as far as the measurements themselves are concerned. The three groups are very much alike in stature, length and breadth of head, and length and breadth of face. It is quite evident, however, that two of these groups—the Caribou and Labrador Eskimos—are by no means pure Eskimo. Stewart (1939) has demonstrated this for the Labrador group, and Birket-Smith's photographs leave no doubt of the considerable amount of white blood present among the Caribou Eskimos. The Ammassalik people, on the other hand, show no such evidence of white mixture. If we may judge from the photographs published by Thalbitzer, Holm, and others, the Ammassalik are one of the purest of all Eskimo groups, showing not the slightest resemblance to the Cree or any other Indians. This is one of those instances, not uncommon in anthropology, where metrical comparisons alone are misleading.

As to the second question, it appears that the Cree Indians at Fort Chipewyan on Lake Athabaska who were measured by Grant (1930) and who, according to Seltzer, represent the type ancestral to the Caribou, Labrador, and Ammassalik Eskimos, are by no means full-bloods. Grant showed that this group of Crees were practically identical, except in stature, with a group he had measured earlier at Oxford House. The latter were clearly mixed-bloods, as they themselves recognized. They were very close metrically to mixed-blood Sioux, from which Grant (1929, p. 27) concludes: "We surmise that the Oxford House Indians have likely as great an admixture of white blood as have the half-blood Sioux." Considering that the Indians in this part of Canada have lived in contact with whites for many years (Fort Chipewyan was established in 1789 and Oxford House in 1792), it is inevitable that extensive race mixture should have occurred. As the modern mixed-blood Cree do not represent the original physical type of the group it is obvious that their measurements cannot be used to trace original relationships. Stewart, in commenting on this same suggested relationship between Eskimo and Cree, has expressed a similar opinion: "I object chiefly to drawing such far-reaching conclusions from such unequal material . . . in other words, to concluding from the similarity of a few measurements taken on small samples of widely separated modern groups, speaking different languages (Eskimo, Algonkian Cree) and undergoing different stages of acculturation (Whites), that they must have had a common ancestry a little over 1,000 years ago" (Stewart, 1939, p. 120).

Birket-Smith remarks on the great physiognomic likeness between the Caribou Eskimos and Chipewyans he had seen on Churchill River, and believes that the similarity in measurements between Hudson Bay Eskimo and Chipewyan-Cree sustains his view of the Indian origin of the Eskimo:

> It is undeniable that the similarities between the [Hudson Bay] Eskimos and both the Cree and Chipewyan are remarkably great . . . all that can be said at present regarding the relationship between the Eskimos and the Northern Woodlands Indians is that in the regions about Lake Athabaska lives an Indian group whose likeness to the Eskimos seems unmistakable. This, however, is a fact of far-reaching importance. It agrees exactly with the opinion I advanced years ago, that the ancestors of the Eskimos once lived in the northern woodlands west of Hudson Bay. [Birket-Smith, 1940, p. 109.]

As indicated earlier, the archeological evidence lends no support to this theory. And the physical resemblances between Caribou Eskimo and neighboring Indians can support it only if one disregards the far more likely explanation that the resemblances in question are due to fairly recent contacts. Birket-Smith (1929, vol. 2, p. 41) has shown that while the Caribou Eskimos have been in contact with the Chipewyan for little more than 200 years, there had been an earlier period of contact with the Cree, as a result of which a number of Indian elements had been adopted by the Caribou. If there was cultural borrowing from these relatively recent contacts it would seem reasonable to suppose that there would also have been opportunity for race mixture.

Seltzer's other thesis—that the Copper Eskimos of Coronation Gulf and the Alaskan Eskimos of Kotzebue Sound, Seward Peninsula, St. Lawrence Island, and Southwest Alaska were descended from the Chipewyan Indians—was a reaffirmation of a similar theory originally proposed by Shapiro. From metrical resemblances between the Chipewyans and the Seward Peninsula, Coronation Gulf, and Smith Sound Eskimos, Shapiro concluded that the origin of these three Eskimo groups was to be found in interior Canada west of Hudson Bay:

> Most probably these present Eskimo groups are derived from an Indian stock which migrated northward to the coast and then moved northeastward to Smith Sound and westward to Seward Peninsula. Finally, this migration seems to be recent and superimposed upon an earlier distribution of Eskimo. [Shapiro, 1931, p. 381.]

Here, as in the case of the Cree, we may first inquire as to the purity of the 44 Chipewyan Indians who, according to Seltzer and Shapiro, represent the ancestral stock from which these several Eskimo groups were derived. Grant, who measured the Chipewyans, was under no illusion as to their purity. He states specifically that the individuals in this group, who had been selected on the word of his Indian interpreters, were, on the basis of his own observations and measurements, no purer than the population as a whole:

> . . . concerning the 44, assumed to be pure Chipewyan, it seems probable, now that the report is worked up, that the judgments of the interpreters have proved fallible, for it seems doubtful if the 44 men they selected as pure, are any more pure than the 33 men of the Fond-du-lac band who were induced to be measured, and who were taken at random. . . .
>
> It becomes evident from a consideration of their general characteristics, teeth, blood, and physical proportions, that those "assumed to be pure" are actually slightly more mixed than the Fond-du-lac band as a whole. [Grant, 1930, pp. 7, 29.]

The correctness of Grant's judgment is borne out by his photographs, which show that half of the adults, from both Fond-du-lac and Chipewyan, are clearly mixed-bloods. As such they can hardly have played the ancestral role ascribed to them.

Leaving in abeyance the question of when and how the Indian strain entered the Central Eskimos, we may consider whether there is any validity in the idea that some of the Alaskan groups are of Indian origin. As mentioned before, it is not uncommon to find Eskimos with Indian-like features around Kotzebue Sound and elsewhere on the Arctic coast of Alaska. Such individuals, however, from this very fact stand out from the others. The simplest and most logical explanation is that a certain amount of Indian blood has been absorbed by the north Alaskan Eskimos in fairly recent times, an inevitable consequence of the fact that some Eskimo groups live far up the rivers in close proximity to the interior Athapaskans, and, further, that it was a general practice for the coast people themselves to roam far into the interior in pursuit of caribou. This, however, is very different from saying that these Eskimos as a whole are derived from an Indian stock. And we must certainly reject the idea that the Kotzebue Eskimos, most of whom are typically Eskimo in appearance, are of Indian descent because they show certain metrical resemblances to a mixed Indian-White group of Chipewyans living on Lake Athabaska far in the interior of Canada.

We come to the same conclusion when we examine the suggested relationship between Chipewyan and the St. Lawrence Island and Seward Peninsula Eskimos. We know from the archeological record that the relationships of the St. Lawrence Eskimos have always been with Siberia, only 40 miles away, and never with the Alaskan mainland. The archeological picture is one of the steady growth and development of an Eskimo culture, enriched from time to time by elements received from Siberia. Archeologically there is not the slightest trace of Indian intrusion. The physical evidence is equally decisive. The Old Bering Sea Eskimo on St. Lawrence Island, to judge from the few skulls that have been found, belonged to the highly specialized long-headed Birnirk type. The Punuk and modern St. Lawrence Eskimos are broader- and lower-headed, being practically identical with the Chuckchee, as Hrdlička has shown.

There are likewise no indications of an Indian irruption at Bering Strait. Skeletal material from a number of late prehistoric and recent sites on the south and west coasts of Seward Peninsula shows that the old long-headed Eskimo type has persisted there into modern times. This is true even at Wales where measurements on the living, taken by Weyer in 1928, revealed the supposed affinity with the Chipewyans. Many of the Wales people, however, are mixed-bloods, as the present writer knows from personal observation and as Weyer's photographs, published by Shapiro, also clearly show.

The principal reasons for the physical differences between the modern Eskimos of northern Alaska and their early Birnirk-type ancestors may safely be stated as (1) white mixture, (2) population movements within the Eskimo territory, such as the late return movement of Thule Eskimos from Canada to northern Alaska, and the migration of broad-headed Siberian Eskimos of Chukchee type to St. Lawrence Island beginning in Punuk times, and (3) at some places a certain amount of Indian blood that has been absorbed as a result of direct or indirect contacts between the Eskimos and the Alaskan Athapaskans. On the other hand, there is no evidence whatever of a mass movement or even infiltration of Indians from the interior to the Arctic or Bering Sea coasts at any time in the past.

Comparisons of Eskimo and Indian skeletal material have led to still other theories. Shapiro (1934) demonstrated a close metrical resemblance between the Huron Indians of southern Ontario and the Point Barrow, Seward Peninsula, and Nunivak Eskimos, which he felt indicated a common origin for these groups. Hrdlička concluded from his study of the "Pre-Koniags" that these earliest inhabitants of Kodiak Island were "physically related slightly to the Eskimo, but much more so to the Algonkian" (1944, p. 434). The lower-headed "Pre-Aleuts" from the Aleutian Islands, on the other hand, bore a close resemblance to the Sioux: "The characteristics of the pre-Aleut and Sioux skulls are seen to be so close that the anthropologist would seem justified in assuming that the two groups had a common and not very far back ancestry" (Hrdlička, 1945, p. 583). However, the striking differences between Pre-Aleut and Sioux long bones, both in size and proportions, created a doubt as to their common ancestry (1945, p. 584).

What is the significance of the very close metrical resemblance between these widely separated peoples? First, we may question the view that the Pre-Koniag are more closely related to Algonkian than to Eskimo. Hrdlička showed that the Pre-Koniag were very different from Eskimos when compared with a pooled series of the Eskimo in general, including those from Greenland and Labrador. However, if the Pre-Koniag are compared with the Eskimo groups nearest to them geographically—those along the Bering Sea coast north to

Norton Sound—a much closer resemblance appears; they are much closer both in measurements and indices to these other Alaskan Eskimos than to the Algonkians (Collins, 1945). Similarly, though in cranial and facial measurements the Pre-Aleut are very close to the Sioux Indians, there are sufficient resemblances to the Bering Sea Eskimos to cast doubt on Hrdlička's statement (1945, p. 579) that the Pre-Aleut "were definitely not Eskimo, nor even their very close relations." It must be remembered that the modern Aleuts spoke a divergent Eskimo dialect and possessed a culture that was basically Eskimo, while the Koniag were actually Eskimos, both linguistically and culturally; the fact that these two modern groups differed physically from the highly specialized long-headed Eskimo type of north Alaska and Greenland is merely indicative of the great physical diversity that exists within the Eskimo stock. The Pre-Koniag and Pre-Aleut, with their longer, narrower, and higher heads and faces, were more Eskimoid than their successors, thereby indicating that in earlier times there was a greater degree of physical unity among the Eskimo than at present.

Despite the fact that the Pre-Aleut were more Eskimoid than the later Aleuts, their remarkably close metrical resemblance to the Sioux must be recognized, even if it cannot be explained, and the same is true for the close similarity between the Seward-Barrow Eskimos and Huron Indians pointed out by Shapiro. In the measurements used for comparison the Hurons are actually closer to the far-away Point Barrow Eskimos (average difference only 0.99 mm.) than they are to their Iroquoian kinsmen in New York or to the neighboring Algonkian Indians of New York, Massachusetts, and Maine (average difference of 1.89 mm.). No one would think of suggesting that the Huron Indians for this reason were more closely related genetically to Point Barrow Eskimos than to other Iroquois. That the measurements themselves point to such an anomalous result is sufficient reason for questioning the validity of this method of comparison. The explanation, I suggest, is that the comparisons are not complete. If, instead of comparing tables of measurements, an anthropologist had before him the actual skulls, he would have no difficulty in distinguishing between Eskimos and Hurons, Pre-Koniag and Algonkians, and Pre-Aleuts and Sioux. Each paired series would differ markedly in such morphological features as contour of the skull, size and shape of the nasal bones, slope of the malars, shape and, usually, size of the orbits, size and shape of the mandible, and thickness of the tympanic plate. In Eskimo skulls, whether long or short, these features, though difficult to express in metrical terms, have a characteristic and easily recognized appearance. It has often been asserted that morphological characters of this kind are adaptive modifications that have resulted from vigorous use of the jaws and teeth. This, however, has never been proved, any more than the corollary explanation that the peculiar Eskimo skull form is itself the product of these same functional forces. The cranial and facial features mentioned are known to be hereditary, for they occur in children and infants as well as adults, and as they are already present in the earliest Eskimo crania, it is difficult to see how they can be explained as functional adaptations.

It is not too much to require that theories on as important a subject as the racial origin of the Eskimo should utilize all the available evidence. However, it cannot be said that any of the theories thus far advanced have fulfilled this requirement. The attempts that have been made to prove an Indian origin for the Eskimo are subject to criticism on several counts: (1) Measurements of living Indians and Eskimos have been compared without inquiry as to the possibility of white mixture, even though photographs of the particular Indians and Eskimos and the history of long-continued white contact leave no doubt that in some cases extensive mixture of this kind has occurred; (2) relationships have been postulated on the basis of head and face measurements alone, without taking into account differences in bodily proportions, nonmetrical facial features, and general physiognomy; (3) widely separated Eskimo groups, or even the Eskimo as a whole, are assumed to have originated from an Indian stock such as Cree or Chipewyan, 1,000 or more years ago, because the Hudson Bay Eskimos, whose territory adjoins that of the Indians, resemble the latter in certain head and face measurements, without considering the alternative explanation that the resemblances in question may be due to recent intermixture; (4) to explain certain metrical resemblances between distant Eskimo and Indian groups, large-scale migrations of Indians from the interior of Canada to the Arctic coast have been postulated, sufficient to absorb or replace the original Eskimo populations, though the evidence of linguistics, archeology, and physical anthropology shows that no such Indian irruptions could possibly have occurred; (5) comparisons of Eskimo and Indian crania, leading to theories of common ancestry of the two groups, like the similar comparisons on the living, have considered measurements alone, to the exclusion of morphological, nonmetrical features that are characteristic of Eskimo crania but not of Indian; (6) and finally, none of the theories advanced—except the dubious functional theory—explain the origin of the long, narrow, and high-headed type characteristic of Greenland and the earlier periods in northern Alaska.

We will search in vain in America for any cranial form from which the highly specialized Eskimo type may likely have been derived. There are numerous long-headed Indian groups such as the Lagoa Santa type of Brazil, the early California and Texas Indians, and some of the northeastern tribes who in skull dimensions alone resemble the Eskimo. The resemblance, however, does not extend to the face, which in all cases is entirely different, nor do any of the Indian crania possess those minor but distinctive Eskimo features such as the thickened tympanic plate, the high frequency of mandibular and palatine tori, or the very narrow and "pinched-up" nasal bones.

In the Old World the situation is almost reversed. We know of no living Asiatic people who have skulls of the very long, high, and narrow Eskimo type. The Eskimo face, on the contrary, is so distinctly Mongoloid that we can only conclude that it has an Asiatic ancestry. The living Eskimos exhibit a number of other obvious Mongoloid features such as skin color and hair, nose form, high frequency of the epicanthic or Mongolian fold of the eye, and shortness of arms and legs in relation to the trunk. These features bring the Eskimos into close relationship to the Asiatics, making them in fact the most Mongoloid of all American aborigines. Most anthropologists would probably agree with Hooton that if it were not for the Eskimos' non-Mongoloid skull form they should be classified as an Asiatic rather than an American race.

It is not unlikely that eventually the Eskimo skull form also will prove to have Asiatic affinities. In recent years Debets and other Russian anthropologists have described a long-headed population from the Neolithic sites around Lake Baikal, sites which, as we have seen, contain cultural material closely resembling that of the earliest known Eskimos. In 1939 Hrdlička studied these Siberian skulls and described them as closely related to the American Indian (1942). He does not bring the Eskimo into the comparison, but it is to be noted that while the majority of the 33 Siberian male skulls are quite low-vaulted, 8 of them are almost as high as the very high-vaulted Birnirk crania. These eight skulls are likewise above the average in length, and some of them are described as having keel-shaped vaults and narrow noses, features suggestive of the Eskimo. Until photographs and a fuller description of the Siberian crania are available the significance of these resemblances must remain in doubt. The present evidence suggests, however, that these early Siberians, whose culture was undoubtedly related to that of the earliest Eskimos, included as a minority element a physical type corresponding rather closely to that of the Eskimo.

The thickened tympanic plate and the mandibular and palatine tori also occur more frequently in Eurasia than in America. The tori are found most often among the Chinese and Japanese (mostly prehistoric), the Ainu, Ostiak, Lapp, and Scandinavians of the Viking period. The thickened tympanic plate occurs with less regularity among the Mongoloid groups but shows a high incidence again in iron-age and Medieval Norse crania from Norway, Iceland, and Greenland. Two of the oldest skulls from northern Europe, from a Mesolithic site on Lake Ladoga near Leningrad, have quite thick tympanic plates (Inostrantzev, 1882). Moreover, one of these skulls shows a striking resemblance to the generalized Alaskan Eskimo type in the shape of the face and the contour of the vault. It may be a point of some significance that the thickened tympanic plate and the mandibular and palatine tori, which are more characteristic of the Eskimo than of any other race, are found to a comparable degree elsewhere only among prehistoric and early historic peoples in regions where Eskimo cultural resemblances also occur.

LANGUAGE

The Eskimo language is divided into two branches, Eskimo proper and Aleutian. The main branch includes the various Eskimo dialects spoken from south Alaska eastward to east Greenland. The Aleutian language differs so sharply from the other Eskimo dialects that for a long time its Eskimo affinity was questioned. However, it is now recognized as being remotely related to Eskimo, just as is the Aleut physical type and culture.

Within the Eskimo group itself the greatest linguistic differentiation is found in Siberia and south and west Alaska, from Prince William Sound north to Norton Sound. Here there are several quite distinctive dialects that differ considerably from those spoken by the other Eskimos. Beginning at Bering Strait we find a different situation, for from this point eastward to Greenland and Labrador the dialects are mutually intelligible. The Alaskan Eskimo dialects north of Norton Sound are actually closer to the dialects of Greenland and Labrador than to those of the adjacent Yukon region. It is difficult to believe that such remarkable linguistic uniformity over so wide an area could have persisted for any great length of time. Rather, it is a strong indication of fairly recent contacts and intercommunication among the northern Eskimos. Perhaps the best explanation is to be found in the movements of the Thule culture. The uniformity was probably first established when the Thule Eskimos moved east from Alaska to Canada and Greenland, and then still further strengthened by a return movement to northern Alaska within the past few centuries, a supposition for which there is also considerable archeological evidence.

In addition to the greater linguistic diversity in south and west Alaska, the dialects there and in Siberia are of a more archaic character than those in the Central regions and Greenland. Thalbitzer, Jenness, Bogoras, and Sapir are all in agreement in viewing this as indicating that the probable center of Eskimo dispersion was in Alaska or Siberia.

It has not been possible to prove a relationship between the Eskimo and any American Indian language. On the other hand, a number of linguists, such as Rasmus Rask, Henry Rink, and C. C. Uhlenbeck, have pointed out resemblances between Eskimo and the Uralian languages of northern Eurasia. The most elaborate attempt to demonstrate a relationship between Eskimo and Uralian was that of Sauvageot in 1924. Most students of Eskimo linguistics were unconvinced by the particular points of similarity adduced by Sauvageot—even Uhlenbeck, who believed that such a relationship existed.

In 1907 Uhlenbeck pointed out a number of striking word similarities between Eskimo and proto-Indoeuropean. Recently he has returned to a consideration of the problem and brought together a much larger body of evidence in support of his theory (Uhlenbeck, 1935, 1942–45). Though Uhlenbeck does not claim a genetic relationship between the two stocks (as he does in the case of Eskimo and Uralian), he believes that the lexical and grammatical resemblances noted are evidence of a very old Indoeuropean influence on Eskimo. Thalbitzer, the foremost authority on Eskimo linguistics, who had been skeptical of Uhlenbeck's earlier attempt, has now subjected this later and more complete study to searching criticism (Thalbitzer, 1945). After rejecting a number of the suggested parallels, Thalbitzer decides that there remains a great deal of evidence in support of Uhlenbeck's argument. If Uhlenbeck and Thalbitzer are correct, the evidence of linguistics is now to be aligned with that of archeology, and to a certain extent physical anthropology, in showing that the original home of the Eskimos was in the Old World. For if the Eskimo language, aside from its possible Uralian affinity had also been subjected to Indoeuropean influence in ancient times, the Eskimos must then have been living in fairly close contact with people speaking these languages, and this must have been somewhere in northern Eurasia, far to the west of the territory they now occupy.

SUMMARY

Our review of the available archeological evidence has led to the conclusion that the deepest roots of Eskimo culture extend back to the early Neolithic of Siberia and the Mesolithic of northern Europe, a conclusion supported by the data of physical anthropology and linguistics. As the Mesolithic rests on an Upper Paleolithic foundation, Eskimo culture might properly be traced to that remote period. The relationship with the Mesolithic, however, is more direct, and we are on firmer ground in seeking the origin of an important segment of Eskimo culture in this later stage and in the related Siberian Neolithic.

There is still a wide gap both in time and space between the oldest known Eskimo cultures and the early Siberian Neolithic. If our reconstruction is correct, we would expect to find somewhere in the vast stretches between Lake Baikal and Bering Strait traces of the later Neolithic peoples who followed the great Siberian rivers from their headwaters down to the Arctic coast. There, under stimulus of Arctic conditions encountered between the Kara and East Siberian Seas, they developed the rudiments of the maritime culture that later found its fullest expression among the Eskimos. Living in permanent settlements of underground houses at the relatively few places suitable for the hunting of sea mammals, these early ancestors of the Eskimos probably remained at first in more or less isolated groups and continued the Neolithic mode of life, which in the Baikal region, meanwhile, was giving way to bronze- and iron-age cultures. In this connection we note the evidence presented by Cernecov and Zolotarev that in late Neolithic times, but still before the intrusion of the nomadic reindeer-breeders, the coasts and rivers of northern Siberia continued to be occupied by isolated and sedentary groups whose underground houses, pottery, and hunting and fishing techniques were essentially Eskimo in character (Cernecov, 1935; Zolotarev, 1938; Collins, 1937, 1940; Jenness, 1941).

The final development and elaboration of Eskimo culture took place at Bering Strait, a region abounding in game—walrus, seals, caribou, birds, fish—and in every way more suitable for human occupation than the north coast of Siberia. For a people equipped to utilize the resources of the sea, Bering Strait was one of the richest hunting territories of the world. Considering this and the fact that it was also accessible to culture influences from the south, it is not surprising that Bering Strait became a center of high cultural development.

The two factors, local culture growth and stimulus from outside, combined to produce the elaborate and specialized Old Bering Sea and Ipiutak cultures. Many of their individual features we know were of local origin, because they are either unique or are shared only with later Eskimo cultures. Nor is there reason for assuming that any large segments of the culture, such as the highly developed art complexes (in contradistinction to their individual elements) were brought in toto from some unknown outside source.

But, granting the potency of local culture development at Bering Strait, there remains much that is difficult to explain on this basis. For instance, the raised "eye" designs that are so prominent in fully developed Old Bering Sea art are so much like those of early Shang and Chou art in China that a connection of some kind seems probable (Collins, 1937, p. 298). Ipiutak art has even closer Asiatic affinities. As Larsen and Rainey have shown, some of the Ipiutak designs and carvings, especially of animals, are strongly reminiscent of Scytho-

Siberian and Permian art. Other Ipiutak features suggest Chinese influence: masklike ivory carvings, long ivory rods resembling back scratchers with one end carved to represent a human hand, and ivory eyes, nose plugs, and mouth covers found with burials (Larsen and Rainey, 1948, pls. 49, 54, 55, 73, 98).

Features such as these suggest that probably in the first millennium B. C., or later, long after the rise of civilization in China, the Eskimos at Bering Strait received strong cultural impulses from interior and eastern Asia. If we visualize the early Baikal Neolithic as the taproot we can imagine these later Asiatic influences as forming a lateral branch which, rooted in the richer and more diversified cultural environment of a later time, contributed its important part to the synthesis of Eskimo culture.

CONCLUSION

On theoretical grounds we are forced to assume that the Indians as well as the Eskimos reached America by way of Bering Strait. Until recently there had been no direct evidence for this assumption as no remains other than Eskimo had been found there. Probably, in the centuries before Eskimo culture had crystallized and established itself in northeast Siberia, some Neolithic groups crossed the Strait by boat or on the ice and penetrated south and east into North America. The presence of Indianlike skulls in the Siberian Neolithic and of Old World culture traits such as stone gouges and comb-stamped pottery in the inland and eastern areas of North America, makes this a distinct possibility. Gjessing (1914) is probably correct in viewing gouges, comb-stamped pottery, and possibly certain kinds of petroglyphs as part of a culture wave which, avoiding the Arctic coast, spread from the inland regions of Eurasia to the interior of North America. Such traits could have passed over at Bering Strait without having become firmly established there, and hence would have left no trace, or they may have left signs of their passage that have not yet been discovered.

Cultural connections of this kind, which are indicated by discontinuous distribution of traits in the Old World and America, and which have no demonstrable connection with the Eskimo problem, are not within the scope of the present paper. Nor is there any point in speculating on still earlier migrations that brought the first human inhabitants to this continent, presumably not across ice or water but over the great land bridge which in Pleistocene and early postglacial times stretched for 1,000 miles from southern Bering Sea north into the Arctic Ocean.

The oldest cultural remains thus far found in the Bering Sea region are those of the Denbigh Flint Complex, a microlithic culture discovered in 1948 by J. L. Giddings, Jr., at Cape Denbigh, Norton

Sound. In 1950 two more sites of the same complex were found in the Brooks Range in the interior of northern Alaska. The Denbigh Flint Complex is apparently post-Pleistocene in age, and though considerably older than any known Eskimo culture, has an important bearing on the problems we have been discussing. We may therefore consider the implications of these new finds.

When a relationship between the Mesolithic and early Neolithic cultures of Eurasia and the earliest Eskimo cultures in Alaska was first postulated (Collins, 1943), it seemed necessary to emphasize that the resemblances did not extend beyond the Eskimo sphere, in time or in space. Previous theories of the Siberian Neolithic as the primary source of American culture in general, even of its earliest manifestations, seemed invalid for the following reasons:

(1) The Siberian Neolithic, even if it rested on an Upper Paleolithic base as Okladnikov contended, was ecologically recent. The animal bones from the Neolithic sites were all of existing species—deer, elk, bears, reindeer, birds, and fish. The same was true of the bones from the oldest Eskimo sites—mainly seal, walrus, caribou, dogs, foxes, birds, and fish, all of species still living. The frozen muck in the vicinity of some of the Eskimo sites contains abundant remains of a Pleistocene fauna, but the Eskimos knew these animals just as we do—as fossils; for the occasional mammoth teeth and pieces of tusks that are found in the old Eskimo middens are always fossilized, unlike the other bones. In contrast, the Paleo-Indians on the High Plains hunted these now extinct mammals.

(2) The relative recency of the Siberian Neolithic, even its earliest stages, was indicated by the absence of burins, which characterized the European Mesolithic, and by the presence of small, symmetrical, finely chipped arrow points, which resembled Eskimo and later American Indian types. These and other Siberian Neolithic traits such as pottery, polished-stone adzes, and the reinforced bow, could hardly have been the possessions of a people ancestral to the earliest Americans.

(3) Physiographic changes of considerable magnitude have occurred since Sandia Cave, the Lindenmeier site, and other Paleo-Indian sites were occupied. This apparently was not true of the early Neolithic sites around Lake Baikal, and in the Eskimo area such changes have definitely been of a minor and local character. Even the oldest Eskimo sites are located along existing shore lines, showing that they were established when the relation of land to sea was essentially the same as today. Any older coastal sites, established when sea level was lower, as it was during glacial and early postglacial times, would now be under water.

The evidence then existing seemed clearly to indicate that the relationship between the early Siberian Neolithic and early Eskimo culture was an exclusive one, and that there was no demonstrable connection between either of these and the far more ancient Paleo-Indian cultures of the western plains. These conclusions still stand insofar as they pertain to the stages of Eskimo and Siberian Neolithic culture thus far known. However, the problem has assumed larger dimensions, and possibly a different orientation, as a result of the recent discoveries in Alaska to which we have referred. In 1948 at Cape Denbigh, on Norton Sound, Giddings discovered an early microlithic culture with definite Mesolithic affinities, older than and possibly ancestral to both Eskimo and Siberian Neolithic, and also connected in some way with Folsom and Yuma. In the summer of 1950 two other sites yielding the same types of stone artifacts were found in the vicinity of Anaktuvuk Pass in the Brooks Range in the interior of northern Alaska by William Irving and Robert J. Hackman (Solecki and Hackman, 1951).

Giddings' early material was found at the base of an old site on Cape Denbigh known to the Eskimos as Iyatayet. The uppermost materials were relatively recent and overlaid deposits representing the Early Punuk period. Beneath this was a clay layer containing flint implements of Ipiutak type together with others resembling prehistoric South Alaskan and Dorset types, and also small stone lamps, round to triangular in shape, and thin, hard pottery fragments decorated with a dentate or simple check stamp. Next came a sterile layer of laminated sandy clay from 2 to 18 inches thick, and underlying this was the basal deposit—a thin stratum of pebbles and flints representing a microlithic industry unlike anything previously known from the New World. This basal "Denbigh Flint Complex" comprised (1) delicately rechipped lamellar flakes, tiny blades made from such flakes, and the polyhedral cores from which they had been struck off; (2) blades of generalized Folsom and Yuma types; and, most surprising of all (3) a large assortment of burins, a specialized form of stone implement never before found in America, the distinguishing feature of which is a restricted, stout edge designed for cutting deep grooves in bone and similar material. The Denbigh burins comprise a number of types, most of them closely resembling those from Upper Paleolithic and Mesolithic horizons in the Old World (Giddings 1949, 1951).

The Cape Denbigh discovery is of great significance in connection with the problem of Early Man in America. It links Folsom and Yuma with the lamellar flake–polyhedral core industry found at the University of Alaska campus site and elsewhere in central Alaska (Rainey, 1939), in the Brooks Range (Solecki, 1950), and at Mesolithic sites in Mongolia (Nelson, 1937) and in Sinkiang, Manchuria, southern Siberia, Kamchatka, and Hokkaido (Watanabe, 1948). It tends to place all these cultural manifestations in a Mesolithic setting, and provides the first clear evidence (mainly burins) of early Old World stone techniques associated with early American cultures. It is too early to speak of the age of the Denbigh Flint Complex vis-à-vis Folsom and Yuma. On the one hand, the presence of burins suggests priority for the Alaskan site. However, we cannot ignore the possibility that Folsom and Yuma may have preceded the Denbigh Complex and that the few blades of those types found at Denbigh sites were vestiges from an earlier period. The reported occurrence of Yuma-type blades in frozen muck of Pleistocene age near Fairbanks (Rainey, 1939) lends support to this supposition. Whatever the relationship may be, the fact that Folsom and Yuma are associated with an Arctic culture characterized by Paleolithic-Mesolithic types of implements suggests that part at least of the story of Early Man in America may eventually be unfolded in Arctic Alaska, the original point of entry. The more recent finds near Anaktuvuk Pass extend the range of the Denbigh Flint Complex and are of particular importance as showing the probable route these early people followed into the heart of the American Continent.

Though the Denbigh Flint Complex is older than anything known from Alaska, with the possible exception of sporadic finds from the frozen muck that have turned up in the course of mining operations (Rainey, 1939), present indications do not point to any very great antiquity, at least for the Anaktuvuk and University campus sites. At both of these places the flint implements are found in or immediately below the surface sod. As the Anaktuvuk region was glaciated, the sites there could have been established only after the last ice recession, but whether soon after or much later there is no indication at present. The Cape Denbigh site may of course be older than these inland sites, and perhaps considerably older than the one on the University campus. However, unless there is geological evidence to the contrary, there is no reason to suppose that it was particularly ancient. The presence of Paleolithic-Mesolithic burins and other implements is hardly decisive in this regard. The Denbigh people may only have been perpetuating a Paleolithic tradition in the use of these implements long after it had faded away in the Old World, just as much later the Ipiutak Eskimos continued to use side-bladed projectiles of Mesolithic-Neolithic form several thousand years after they had passed out of use in Eurasia.

The Old World affinities of the Denbigh Flint Complex cannot yet be localized. Its numerous types of Paleolithic-Mesolithic burins suggest a relationship with the European Mesolithic, while lamellar flaking connects it with central and northern Asia. The crucial area is northeastern Siberia. Our knowledge of the pre-Eskimo archeology of this region is very meager, but it seems safe to predict that sites comparable in age and lithic content to Cape Denbigh will eventually be found there, sites with both lamellar flaking and burins. Such, indeed, may be the Neolithic sites on the Lower Kolyma and Chukchee Peninsula recently reported but not described by Okladnikov (Shimkin, 1949). However, as burins are not mentioned, these sites may represent only a further, extreme northeastern extension of the north Asiatic lamellar flake-polyhedral core complex described by Watanabe (1948).

The significance of the Cape Denbigh and Anaktuvuk finds in connection with the Eskimo problem is not yet clear. They may, however, have important implications for Eskimo archeology. The Denbigh Flint Complex is, of course, very different from, and much older than, what we usually think of as Eskimo. The simplest explanation would be that this complex—an assemblage containing Yuma and Folsom-like blades and Paleolithic-Mesolithic burins, and separated from overlying Eskimo deposits by a sterile layer of clay—had no connection with these later deposits. However, there are reasons for suspecting that there was a connection: (1) It is somewhat difficult to believe that its location directly beneath an Eskimo site was a mere coincidence; (2) lamellar flaking, though absent at Ipiutak, is one of the most characteristic features of the Dorset, a culture which on other grounds appears to represent an older stage than Ipiutak or Old Bering Sea. Polyhedral cores have not been reported at Dorset sites but this may be accidental, for Solberg (1907, p. 39, fig. 14) describes one from Disko Bay, Greenland, in a collection which contains many Dorset types; (3) the Cape Denbigh and Anaktuvuk burins appear to be the prototypes of similar implements found at Dorset sites which were no doubt used as burins; (4) the presence of small, finely chipped side blades indicates that the Cape Denbigh people used slotted bone points, probably arrowheads, with inset blades along the sides, a form characteristic of Ipiutak and the European Mesolithic; (5) one of the Denbigh implements, an obovate blade "carefully retouched on both convex faces and then ground to a strong bevel at the broad end" (Giddings, 1949, p. 89, fig. 2, e), seems to be essentially the same as the characteristic Old Bering Sea implement with strongly bevelled ends which the present writer described as "adz-like scrapers" (Collins, 1937, p. 152, fig. 16, pl. 42, figs. 12–14), and which Larsen and Rainey (1948, p. 85, pl. 10, fig. 1) later found actually hafted as adz blades at Ipiutak; (6) the Denbigh Flint Complex includes short, wide, thin blades closely resembling those found hafted to sealing harpoon heads at Ipiutak. Though the Ipiutak flint technique on the whole is different, Giddings (1951) concludes that "it looks as though Ipiutak has inherited these particular resemblances [the probable harpoon blades, a form of flake knife or scraper, and occasional diagonal flaking] from an earlier horizon represented by the Cape Denbigh finds"; (7) another linkage may also be provided by Larsen's recent discovery in a

Seward Peninsula cave of lamellar flakes associated with slender arrowheads of antler with two long, deep grooves for side blades, a type which is essentially Ipiutak, but undecorated. This cave, discovered in 1948 by David Hopkins, appears to be intermediate in age between Ipiutak and Cape Denbigh.

On the basis of the present evidence it appears that despite the definite Paleolithic-Mesolithic affinities of the Denbigh Flint Complex, a cultural relationship of some kind existed between the early Cape Denbigh people and the Eskimos who later occupied the same region. A similar relationship also existed between the Denbigh Complex and Folsom and Yuma. If our interpretation is correct this means that the hitherto distinct problems of Eskimo origins and of Early Man in America must now be considered in a single frame of reference, one that extends the range and scope of both problems and adds new facets and perplexities to each.

Thus Folsom and Yuma are brought into relationship with an Arctic culture of unknown age, which in turn is related to Mesolithic cultures of Eurasia. As for the other side of the problem, the Denbigh finds attest the antiquity of a number of Eskimo culture traits and strengthen the view that Eskimo culture is basically of Mesolithic origin. At present we can only guess at the extent of the time gap between the Denbigh Flint Complex and the oldest known Eskimo cultures, but it is probably a difference to be measured in millenniums rather than centuries. Until that point is determined and until more information is available for Siberia, the role of the Denbigh Complex in the formation of Eskimo and Siberian culture will remain obscure. We can only say that it is much older than, and yet in some way related to, Eskimo, just as it also clearly antedates and in all probability represents a stage of culture ancestral to the early Neolithic cultures around Lake Baikal and the Ural Mountains which show such close resemblances to early Eskimo.

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